

09/709,581

* * * * * Welcome to STN International * * * * *

NEWS 1 Web Page URLs for STN Seminar Schedule - N. America
 NEWS 2 "Ask CAS" for self-help around the clock
 NEWS 3 Feb 24 PCTGEN now available on STN
 NEWS 4 Feb 24 TEMA now available on STN
 NEWS 5 Feb 26 NTIS now allows simultaneous left and right truncation
 NEWS 6 Feb 26 PCTFULL now contains images
 NEWS 7 Mar 04 SDI PACKAGE for monthly delivery of multifile SDI results
 NEWS 8 Mar 24 PATDPAFULL now available on STN
 NEWS 9 Mar 24 Additional information for trade-named substances without
 structures available in REGISTRY
 NEWS 10 Apr 11 Display formats in DGENE enhanced
 NEWS 11 Apr 14 MEDLINE Reload
 NEWS 12 Apr 17 Polymer searching in REGISTRY enhanced
 NEWS 13 Jun 13 Indexing from 1947 to 1956 added to records in CA/CAPLUS
 NEWS 14 Apr 21 New current-awareness alert (SDI) frequency in
 WPIDS/WPINDEX/WPIX
 NEWS 15 Apr 28 RDISCLOSURE now available on STN
 NEWS 16 May 05 Pharmacokinetic information and systematic chemical names
 added to PHAR
 NEWS 17 May 15 MEDLINE file segment of TOXCENTER reloaded
 NEWS 18 May 15 Supporter information for ENCOMPPAT and ENCOMPLIT updated
 NEWS 19 May 19 Simultaneous left and right truncation added to WSCA
 NEWS 20 May 19 RAPRA enhanced with new search field, simultaneous left and
 right truncation
 NEWS 21 Jun 06 Simultaneous left and right truncation added to CBNB
 NEWS 22 Jun 06 PASCAL enhanced with additional data
 NEWS 23 Jun 20 2003 edition of the FSTA Thesaurus is now available
 NEWS 24 Jun 25 HSDB has been reloaded
 NEWS 25 Jul 16 Data from 1960-1976 added to RDISCLOSURE
 NEWS EXPRESS April 4 CURRENT WINDOWS VERSION IS V6.01a, CURRENT
 MACINTOSH VERSION IS V6.0b(ENG) AND V6.0Jb(JP),
 AND CURRENT DISCOVER FILE IS DATED 01 APRIL 2003
 NEWS HOURS STN Operating Hours Plus Help Desk Availability
 NEWS INTER General Internet Information
 NEWS LOGIN Welcome Banner and News Items
 NEWS PHONE Direct Dial and Telecommunication Network Access to STN
 NEWS WWW CAS World Wide Web Site (general information)

Enter NEWS followed by the item number or name to see news on that
specific topic.

All use of STN is subject to the provisions of the STN Customer
agreement. Please note that this agreement limits use to scientific
research. Use for software development or design or implementation
of commercial gateways or other similar uses is prohibited and may
result in loss of user privileges and other penalties.

* * * * * STN Columbus * * * * *

FILE 'HOME' ENTERED AT 07:06:51 ON 18 JUL 2003

=> file caplus

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.21

0.21

STN Columbus

FILE 'CAPLUS' ENTERED AT 07:07:08 ON 18 JUL 2003
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2003 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 18 Jul 2003 VOL 139 ISS 4
FILE LAST UPDATED: 17 Jul 2003 (20030717/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

```
=> s emulsion or microemulsion or micro-emulsion
    176505 EMULSION
    107534 EMULSIONS
    214126 EMULSION
          (EMULSION OR EMULSIONS)
    9318 MICROEMULSION
    7757 MICROEMULSIONS
    10681 MICROEMULSION
          (MICROEMULSION OR MICROEMULSIONS)
    118044 MICRO
    228 MICROS
    118265 MICRO
          (MICRO OR MICROS)
    176505 EMULSION
    107534 EMULSIONS
    214126 EMULSION
          (EMULSION OR EMULSIONS)
    252 MICRO-EMULSION
          (MICRO(W) EMULSION)
L1    218311 EMULSION OR MICROEMULSION OR MICRO-EMULSION
```

```
=> (soya or soybean or soy) and rapeeed
(SOYA IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).
```

```
=> s (soya or soybean or soy) and rapeeed
    7502 SOYA
    2 SOYAS
    7503 SOYA
          (SOYA OR SOYAS)
    91771 SOYBEAN
    14652 SOYBEANS
    94846 SOYBEAN
          (SOYBEAN OR SOYBEANS)
    16231 SOY
    2 SOYS
```

STN Columbus

```
16231 SOY
      (SOY OR SOYS)
      1 RAPEEED
L2      1 (SOYA OR SOYBEAN OR SOY) AND RAPEEED

=> s (soya or soybean or soy) and rapeseed
      7502 SOYA
      2 SOYAS
      7503 SOYA
      (SOYA OR SOYAS)
      91771 SOYBEAN
      14652 SOYBEANS
      94846 SOYBEAN
      (SOYBEAN OR SOYBEANS)
      16231 SOY
      2 SOYS
      16231 SOY
      (SOY OR SOYS)
      7657 RAPESEED
      175 RAPESEEDS
      7695 RAPESEED
      (RAPESEED OR RAPESEEDS)
L3      1862 (SOYA OR SOYBEAN OR SOY) AND RAPESEED

=> del l2 y

=> biodiesel
BIODIESEL IS NOT A RECOGNIZED COMMAND
The previous command name entered was not recognized by the system.
For a list of commands available to you in the current file, enter
"HELP COMMANDS" at an arrow prompt (=>).

=> s biodiesel
      664 BIODIESEL
      18 BIODIESELS
L4      665 BIODIESEL
      (BIODIESEL OR BIODIESELS)

=> d his

      (FILE 'HOME' ENTERED AT 07:06:51 ON 18 JUL 2003)

      FILE 'CAPLUS' ENTERED AT 07:07:08 ON 18 JUL 2003
L1      218311 S EMULSION OR MICROEMULSION OR MICRO-EMULSION
L3      1862 S (SOYA OR SOYBEAN OR SOY) AND RAPESEED
L4      665 S BIODIESEL

=> s l1 and (l2 or l3)
L2 NOT FOUND
The L-number entered could not be found. To see the definition
of L-numbers, enter DISPLAY HISTORY at an arrow prompt (=>).

=> s l1 and (l4 or l3)
L5      104 L1 AND (L4 OR L3)

=> s emulsifier or emulsive
      28878 EMULSIFIER
      17665 EMULSIFIERS
      36822 EMULSIFIER
      (EMULSIFIER OR EMULSIFIERS)
      162 EMULSIVE
      2 EMULSIVES
```

STN Columbus

164 EMULSIVE
 (EMULSIVE OR EMULSIVES)
 L6 36960 EMULSIFIER OR EMULSIVE

=> s fuel amd l5
 MISSING OPERATOR AMD L5
 The search profile that was entered contains terms or
 nested terms that are not separated by a logical operator.

=> s fuel and l5
 299575 FUEL
 141166 FUELS
 346162 FUEL
 (FUEL OR FUELS)
 L7 21 FUEL AND L5

=> d l7 1-21 all

L7 ANSWER 1 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2003:376766 CAPLUS
 DN 138:371052
 TI Process for making hydrogen gas
 IN Graham, David E.; Yodice, Richard; Burrington, James D.; Langer, Deborah
 A.; Mulla, John J.
 PA The Lubrizol Corporation, USA
 SO PCT Int. Appl., 63 pp.
 CODEN: PIXXD2
 DT Patent
 LA English
 IC ICM C01B003-32
 ICS C01B003-38; C01B003-34; C10L001-32
 CC 49-1 (Industrial Inorganic Chemicals)
 Section cross-reference(s): 52

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003040030	A1	20030515	WO 2002-US34917	20021031
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				

PRAI US 2001-8130 A 20011105

AB This invention relates to a process for making hydrogen gas from a
 hydrocarbon source. More particularly, this invention relates to a
 process for making hydrogen gas using a water blended hydrocarbon
 feedstock compn. as the hydrocarbon source. The compn. forms a
 water-in-oil **emulsion**, an oil-in-water **emulsion** or a **micro-emulsion**.

ST **fuel** cell hydrogen manuf hydrocarbon steam refirming

IT Sulfonic acids, uses

RL: NUU (Other use, unclassified); USES (Uses)
 (alkene; process for making hydrogen gas)

IT Phenols, uses

RL: NUU (Other use, unclassified); USES (Uses)
 (alkyl, ethoxylated; process for making hydrogen gas)

IT Phenols, uses

RL: NUU (Other use, unclassified); USES (Uses)
 (alkyl; process for making hydrogen gas)

STN Columbus

IT Sulfonic acids, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (alkylarene, salts; process for making hydrogen gas)

IT Lecithins
 Monoglycerides
 RL: NUU (Other use, unclassified); USES (Uses)
 (derivs.; process for making hydrogen gas)

IT Fatty acids, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (esters, ethoxylated; process for making hydrogen gas)

IT Phosphorus acids
 RL: NUU (Other use, unclassified); USES (Uses)
 (esters; process for making hydrogen gas)

IT Alcohols, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (ethoxylated, carboxylated; process for making hydrogen gas)

IT Amides, uses
 Amines, uses
 Fats and Glyceridic oils, uses
 Fatty acids, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (ethoxylated; process for making hydrogen gas)

IT Esters, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (fatty, ethoxylated; process for making hydrogen gas)

IT Petroleum, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (heavy, hydrocarbon derived from; process for making hydrogen gas)

IT Alfalfa (Medicago sativa)
 Arecaceae
 Corn
 Oil sand
 Rapeseed
 Soybean (Glycine max)
 (hydrocarbon derived from; process for making hydrogen gas)

IT Bitumens
 Coal, processes
 Coke
 Shale
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (hydrocarbon derived from; process for making hydrogen gas)

IT **Emulsions**
 (microemulsions; process for making hydrogen gas)

IT **Emulsions**
 (oil-in-water; process for making hydrogen gas)

IT Diesel fuel
 Fuel cells
 Fuel oil
 Hydrocracking
 Hydrodesulfurization
 Petroleum hydrotreating
 Steam reforming
 Steam reforming catalysts
 (process for making hydrogen gas)

IT Platinum-group metals
 RL: CAT (Catalyst use); USES (Uses)
 (process for making hydrogen gas)

IT Gasoline
 Hydrocarbons, processes
 Kerosene

STN Columbus

Naphtha
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (process for making hydrogen gas)

IT Amine oxides
 RL: NUU (Other use, unclassified); USES (Uses)
 (process for making hydrogen gas)

IT Alcohols, uses
 Fatty acids, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (propoxylated; process for making hydrogen gas)

IT Sulfonic acids, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (salts; process for making hydrogen gas)

IT Reforming apparatus
 (steam; process for making hydrogen gas)

IT **Emulsions**
 (water-in-oil; process for making hydrogen gas)

IT 7439-88-5, Iridium, uses 7440-02-0, Nickel, uses 7440-04-2, Osmium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium, uses 7440-48-4, Cobalt, uses
 RL: CAT (Catalyst use); USES (Uses)
 (process for making hydrogen gas)

IT 1333-74-0P, Hydrogen, preparation
 RL: IMF (Industrial manufacture); PREP (Preparation)
 (process for making hydrogen gas)

IT 56-81-5D, Glycerol, esters 57-50-1D, Sucrose, esters 504-75-6D, Imidazoline, derivs. 1330-69-4, Dodecyl benzene sulfonate 5138-18-1D, Sulfosuccinic acid, derivs. 9005-53-2, Lignin, uses 9005-53-2D, Lignin, derivs. 12441-09-7D, Sorbitan, derivs. 12441-09-7D, Sorbitan, esters 25496-01-9, Tridecyl benzene sulfonic acid 27176-87-0, Dodecyl benzene sulfonic acid 50852-11-4, Naphthalene sulfonate 113032-51-2, Tridecyl benzene sulfonate
 RL: NUU (Other use, unclassified); USES (Uses)
 (process for making hydrogen gas)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Exxonmobil Res Eng Co; WO 0070697 A 2000 CAPLUS
- (2) Ici Ltd; GB 916981 A 1963 CAPLUS
- (3) Lubrizol Corp; WO 0015740 A 2000 CAPLUS
- (4) Taylor, W; US 3410661 A 1968
- (5) Yount, J; US 4162143 A 1979 CAPLUS

L7 ANSWER 2 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2003:322276 CAPLUS
 DN 138:308408
 TI Treatment of oiled objects to remove oil therefrom
 IN Kock, Johan Lodewyk Fransciscus
 PA S. Afr.
 SO S. African, 22 pp.
 CODEN: SFXAB
 DT Patent
 LA English
 IC ICM B08B
 ICS A01K; C09K
 CC 59-2 (Air Pollution and Industrial Hygiene)
 Section cross-reference(s): 51, 52, 61

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	ZA 9906016	A	20000405	ZA 1999-6016	19990920

STN Columbus

PRAI ZA 1999-6016 A 19990920
 ZA 1998-5872 19980703

AB A method of treating an oiled object to remove oil therefrom comprising the steps of: applying a first cleaning agent to the object, the first cleaning agent being characterized therein that it comprises a fatty acid or an esterified fatty acid-contg. substance such as **biodiesel**, suitable for removing the oil; and a second cleaning agent for removing the oil and the cleaning agent from the surface. The object may comprise a living object such as for example plants; human or animal skin; fur; feathers; or exterior of animals. Alternatively, the object may comprise a non- living objects such as sand; rocks; water; engines or parts thereof; or storage tanks. The first cleaning agent may also be applied directly to the spilled oil. In a given example, the first cleaning agent has approx. the following compn.: Et palmitate, Et stearate, Et oleate and Et linoleate. The second cleaning agent was formulated by adding tap water (10 wt.%) to unwashed **biodiesel** and bringing the pH to 7.0 with the addn. of concd. HCl. An animal shampoo known as Pulvex was then added and this mixt. was shaken vigorously to effect a stable **emulsion**. It is believed that the soap causes the water, glycerol and other polar liqs. such as possibly ethanol in the admixt. to be present in the form of inverted micelles in the non-polar solvent namely unwashed **biodiesel**.

ST oil spill treatment **biodiesel** detergent animal cleaning

IT Diesel **fuel** substitutes
 (biodiesel; method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT Fatty acids, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (cleaning agent component; method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT Fatty acids, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (esters, cleaning agent component; method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT Aves
 (marine bird; method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT Aquatic animal
 Detergents
 Marine animal
 Oil spill
 (method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT Soaps
 RL: TEM (Technical or engineered material use); USES (Uses)
 (method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT Petroleum, processes
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); REM (Removal or disposal); PROC (Process)
 (removal of; method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT Fatty acids, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (sunflower-oil, Et esters; method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT Fatty acids, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (sunflower-oil, esters; method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT 111-61-5, Ethyl stearate 111-62-6, Ethyl oleate 544-35-4, Ethyl linoleate 628-97-7, Ethyl palmitate
 RL: TEM (Technical or engineered material use); USES (Uses)

STN Columbus

(cleaning agent component; method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

IT 56-81-5, Glycerol, uses 508169-78-6, Pulvex (soap)
 RL: TEM (Technical or engineered material use); USES (Uses)
 (method and cleaning agent for treatment of oiled animals and other objects affected by an oil spill)

L7 ANSWER 3 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2003:208448 CAPLUS

TI **Biodiesel fuels** from vegetable oils via catalytic and non-catalytic supercritical alcohol transesterifications and other methods: a survey

AU Demirbas, Ayhan

CS Department of Chemical Education, Karadeniz Technical University, PK 216, Trabzon, 61035, Turk.

SO Energy Conversion and Management (2003), 44(13), 2093-2109
 CODEN: ECMADL; ISSN: 0196-8904

PB Elsevier Science Ltd.

DT Journal

LA English

CC 52 (Electrochemical, Radiational, and Thermal Energy Technology)

AB Vegetable oil **fuels** have not been acceptable because they were more expensive than petroleum **fuels**. With recent increases in petroleum prices and uncertainties concerning petroleum availability, there is renewed interest in vegetable oil **fuels** for Diesel engines. Diln. of oils with solvents and **microemulsions** of vegetable oils lowers the viscosity, but some engine performance problems still exist. The purpose of the transesterification process is to lower the viscosity of the oil. Pyrolysis produces more biogasoline than **biodiesel fuel**. Soap pyrolysis products of vegetable oils can be used as alternative Diesel engine **fuel**. Me and Et esters of vegetable oils have several outstanding advantages among other new renewable and clean engine **fuel** alternatives. The main factors affecting transesterification are the molar ratio of glycerides to alc., catalyst, reaction temp. and pressure, reaction time and the contents of free fatty acids and water in oils. The commonly accepted molar ratios of alc. to glycerides are 6:1-30:1.

RE.CNT 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Acaroglu, M; Energy Sources 2001, V23, P823 CAPLUS
- (2) Adams, C; JAOCS 1983, V60, P1574 CAPLUS
- (3) Akdeniz, F; Energy Edu Sci Technol 1998, V2, P17 CAPLUS
- (4) Alencar, J; J Agric Food Chem 1983, V31, P1268 CAPLUS
- (5) Altin, R; Energy Convers Manage 2001, V42, P529 CAPLUS
- (6) Barsic, N; SAE Paper 1981, 810262
- (7) Bartholomew, D; JAOCS 1981, V58, P286A
- (8) Bender, M; Biores Technol 1999, V70, P81 CAPLUS
- (9) Bilgin, A; Energy Sources 2002, V24, P431 CAPLUS
- (10) Billaud, F; JAOCS 1995, V72, P1149 CAPLUS
- (11) Canakci, M; Trans ASAE 2001, V44, P1429 CAPLUS
- (12) Chand, C; Ind Eng Chem 1947, V39, P1543
- (13) Chand, N; J Sci Ind Res 2002, V61, P7
- (14) Darnoko, D; JAOCS 2000, V77, P1263 CAPLUS
- (15) Demirbas, A; Energy Convers Manage 2002, V43, P2349 CAPLUS
- (16) Demirbas, A; Fuel 1998, V77, P1117 CAPLUS
- (17) Demirbas, A; Unpublished data
- (18) Diasakou, M; Fuel 1998, V77, P1297 CAPLUS
- (19) Dunn, R; Trans ASAE 2001, V44, P1151
- (20) Encinar, J; Energy Fuels 2002, V16, P443 CAPLUS
- (21) Formo, M; Physical properties of fats and fatty acids. 4th ed. Bailey's industrial oil and fat products 1979, V1
- (22) Formo, M; Physical properties of fats and fatty acids. 4th ed. Bailey's industrial oil and fat products 1979, V1, P193

STN Columbus

- (23) Freedman, B; JAOCS 1986, V63, P1375 CAPLUS
- (24) Freedman, B; Proceedings of the International Conference on Plant and Vegetable Oils as Fuels 1982, P17
- (25) Fuls, J; Third International Conference On Energy Use Management 1981, P1595
- (26) Giannelos, P; Ind Crop Prod 2002, V16, P1 CAPLUS
- (27) Goering, C; Proceeding of the International Conference on Plant and Vegetable Oils as Fuels 1982, P279 CAPLUS
- (28) Goering, E; Trans ASAE 1982, V25, P1472
- (29) Goodrum, J; Biomass Bioenergy 2002, V22, P205 CAPLUS
- (30) Isigigur, A; Appl Biochem Biotechnol 1994, V45/46, P103
- (31) Iso, M; J Mol Cat B-Enzyme 2001, V16, P53 CAPLUS
- (32) Karaosmonoglu, F; Energy Sources 1999, V21, P221
- (33) Komers, K; Eur J Lipid Sci Technol 2001, V103, P363 CAPLUS
- (34) Lang, X; Biores Technol 2001, V80, P53 CAPLUS
- (35) Ma, F; Biores Technol 1999, V70, P1 CAPLUS
- (36) Markevich, M; Ind Eng Chem Res 2000, V39, P2140 CAPLUS
- (37) Martini, N; Proceeding of the Symposium 1997, P6
- (38) Mittelbach, M; JAOCS 2001, V78, P573 CAPLUS
- (39) Pioch, D; Oleagineux 1993, V48, P289 CAPLUS
- (40) Pryor, R; Trans ASAE 1982, V26, P333
- (41) Saka, S; Fuel 2001, V80, P225 CAPLUS
- (42) Saucedo, E; Ingeniera Quimica 2001, V20, P19
- (43) Schwab, A; Fuel 1987, V66, P1372 CAPLUS
- (44) Schwab, A; JAOCS 1988, V65, P1781 CAPLUS
- (45) Shay, E; Biomass Bioenergy 1993, V4, P227 CAPLUS
- (46) Sonntag, N; Structure and composition of fats and oils. 4th ed 1979, V1, P1
- (47) Sprules, F; US 236694 1950
- (48) Suppes, G; JAOCS 2001, V78, P139 CAPLUS
- (49) Wright, H; Oil and Soap 1944, V21, P145 CAPLUS
- (50) Zhang, D; Master thesis, Food Science and Technology, University of Nebraska
- (51) Ziejewski, M; International Congress and Exposition 1986, Paper No 860301

L7 ANSWER 4 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2003:202747 CAPLUS

DN 138:240388

TI Strained ring compounds as combustion improvers for liquid fuels, including gasoline, diesel fuel, and fuel oil substitutes

IN Baker, Mark R.; Daly, Daniel T.

PA The Lubrizol Corporation, USA

SO PCT Int. Appl., 19 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM C10L001-18

CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 24

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	----	-----	-----
PI	WO 2003020852	A2	20030313	WO 2002-US27673	20020829
	W:		AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW		
	RW:		AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR		

STN Columbus

PRAI US 2001-317205P P 20010905
 OS MARPAT 138:240388
 AB Combustion improvers for liq. **fuels** are compds. with 3-4-membered strained rings that can contain N and O heteroatoms in the ring. Suitable strained ring-type compds. include an epoxy or oxetane ring, a cyclopropyl or cyclobutyl group, bicyclopropyl, C1-5-alkyl mono- or disubstituted bicyclopropyl, fused bicyclo or spirocyclic groups, dicyclopropyl ketone, dicyclobutyl ketone, cyclopropylmethanol, cyclobutyl amine, cyclobutyl hydroxylamine, 3,3-dimethyloxetane, 1-methoxy-2-methylpropylene oxide, nitro compds., and hydroxylamine salts. Suitable hydroxylamines are of general formulas $Ra[N(Rb)-OH]_n$ (Ra and $Rb = H$ and primary and secondary hydrocarbyl; $n = 1-30$) and $Rc[N(OH)-Rd]_x-N(OH)-Rc$ ($Rc = H$ or hydrocarbyl; $Rd =$ lower alkylene; $x = 1-29$). The compds. are combustion improvers meeting specifications ASTM D-4814 (gasoline), ASTM D-975 (diesel **fuel**), and ASTM D-396 (**fuel** oil).

ST strained ring combustion improver **fuel**; gasoline combustion improver strained ring; diesel combustion improver strained ring; **fuel** oil combustion improver strained ring; cyclopropyl strained ring combustion improver **fuel**

IT Cycloalkanes
 RL: MOA (Modifier or additive use); USES (Uses)
 (C3-4; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

IT Amines, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (N-hydroxy, strained-ring; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

IT Epoxides
 RL: MOA (Modifier or additive use); USES (Uses)
 (additives; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

IT Diesel **fuel** substitutes
 (biodiesel, synthetic liq. **fuels**; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

IT Diesel **fuel** substitutes
 Gasoline substitutes
 (combustion improvers for; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

IT **Fuel** additives
 (combustion improvers, for synthetic liq. **fuels**; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

IT Diesel **fuel** additives
Fuel oil additives
 Gasoline additives
 (combustion improvers; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

IT **Fuels**
 (emulsions, combustion improvers for; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

IT **Emulsions**
 (**fuel**, combustion improvers for; strained ring compds. as combustion improvers for liq. **fuels**, including gasoline, diesel **fuel**, and **fuel** oil substitutes)

STN Columbus

- IT Alcohols, uses
Ethers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(liq. **fuels**; strained ring compds. as combustion improvers
for liq. **fuels**, including gasoline, diesel **fuel**,
and **fuel** oil substitutes)
- IT Strain
(ring; strained ring compds. as combustion improvers for liq.
fuels, including gasoline, diesel **fuel**, and
fuel oil substitutes)
- IT Nitro compounds
Spiro compounds
RL: MOA (Modifier or additive use); USES (Uses)
(strained-ring; strained ring compds. as combustion improvers for liq.
fuels, including gasoline, diesel **fuel**, and
fuel oil substitutes)
- IT **Fuel** oil
(substitutes, combustion improvers for; strained ring compds. as
combustion improvers for liq. **fuels**, including gasoline,
diesel **fuel**, and **fuel** oil substitutes)
- IT Fischer-Tropsch reaction
(synthetic liq. **fuels**; strained ring compds. as combustion
improvers for liq. **fuels**, including gasoline, diesel
fuel, and **fuel** oil substitutes)
- IT Fats and Glyceridic oils, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(vegetable, synthetic liq. **fuels**; strained ring compds. as
combustion improvers for liq. **fuels**, including gasoline,
diesel **fuel**, and **fuel** oil substitutes)
- IT 110-05-4, tert-Butylperoxide 696-59-3, Dimethoxytetrahydrofuran
1121-37-5, Dicyclopropyl ketone 2516-33-8, Cyclopropylmethanol
2516-34-9, Cyclobutyl amine 4415-97-8, Dicyclobutyl ketone 5685-46-1,
Bicyclopropyl 5685-46-1D, Bicyclopropyl, derivs. 6921-35-3,
3,3-Dimethyloxetane 19693-75-5 25322-01-4, Nitropropane 37459-10-2
455885-93-5
RL: MOA (Modifier or additive use); USES (Uses)
(combustion improver; strained ring compds. as combustion improvers for
liq. **fuels**, including gasoline, diesel **fuel**, and
fuel oil substitutes)

L7 ANSWER 5 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

- AN 2003:86588 CAPLUS
- DN 139:24020
- TI Emulsification of pyrolysis derived bio-oil in diesel **fuel**
- AU Ikura, Michio; Stanciulescu, Maria; Hogan, Ed
- CS Natural Resources Canada, CANMET Energy Technology Centre--Ottawa, Ottawa,
Can.
- SO Biomass and Bioenergy (2003), 24(3), 221-232
CODEN: BMSBEO; ISSN: 0961-9534
- PB Elsevier Science Ltd.
- DT Journal
- LA English
- CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 51
- AB Bio-oil produced by fast pyrolysis is very viscous, highly acidic and does
not ignite easily as it contains a substantial amt. of structural water.
To circumvent these problems pyrolytic bio-oil was emulsified in No. 2
diesel **fuel**. In the current investigation, very heavy fractions of
bio-oil were removed from bio-oil by centrifugation prior to
emulsification. **Emulsions** so produced can be very stable depending on
processing conditions. A series of emulsification runs was carried out to

STN Columbus

det. the relationship between process conditions, **emulsion** stability and processing costs. Of five process variables examd. (temp., residence time, bio-oil concn., surfactant concn. and power input per unit vol.) only the last three had significant effects on **emulsion** stability. The tests showed there were optimal operating conditions that produced stable **emulsions**. The formation of stable **emulsions** required surfactant concn. ranging from 0.8 to 1.5 wt% of total, depending on bio-oil concn. and power input. The costs of producing stable **emulsions** using Hypermers (com. surfactants) were unacceptably high, ranging from 5.2 cents/L for 10% **emulsion** to 8.9 cents/L for 30% **emulsion**. However, when the cost of a newly developed proprietary CANMET surfactant was assumed, they could be reduced to 2.6 cents/L for 10% **emulsion**, 3.4 cents/L for 20% **emulsions** and 4.1 cents/L for 30% **emulsions**, resp. **Fuel** properties such as heating values, cetane no., viscosity and corrosivity were characterized. The heating value of centrifuged bio-oil was about one third of that of No. 2 diesel, reducing the heating values of **emulsions** accordingly. A cetane no. of pyrolytic bio-oil was 5.6. **Emulsion** viscosities, particularly in the 10-20% bio-oil concn. range, are substantially lower than the viscosity of bio-oil itself, making these products very easy to handle. The viscosity of **emulsion fuels** was best described by Einstein's equation for dil. solid dispersions. The corrosivity of **emulsion fuels** defined by the wt. loss of steel is about half of the bio-oil alone.

ST **biodiesel** emulsification
IT Diesel **fuel** substitutes
 (**biodiesel**; emulsification of pyrolysis derived bio-oil in diesel **fuel**)
IT Diesel **fuel**
 Emulsions
 (emulsification of pyrolysis derived bio-oil in diesel **fuel**)
IT Emulsification
 (of pyrolysis derived bio-oil in diesel **fuel**)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Adjaye, J; Fuel Processing Technology 1995, V45, P161 CAPLUS
(2) Bertoli, C; SAE paper 2000, 2000-01-2975
(3) Bridgwater, A; Journal of Analytical and Applied Pyrolysis 1999, V51, P3 CAPLUS
(4) Bridgwater, A; Proceedings Third Biomass Conference of the Americas 1997, V1, P797
(5) Huffman, D; Proceedings First Biomass Conference of the Americas 1993
(6) Ikura, M; US 5820640 1998 CAPLUS
(7) Jay, D; ASME Fall Technical Conference 1995, V3, P51
(8) Quemada, D; Lecture notes in physics 1982, P210 CAPLUS
(9) Scott, D; Journal of Analytical and Applied Pyrolysis 1999, V51, P23 CAPLUS
(10) Tadros, T; Colloids and Surfaces A: Physicochemical and Engineering Aspects 1994, V91, P39 CAPLUS
(11) Vitolo, S; Fuel 1999, V78, P1147 CAPLUS

L7 ANSWER 6 OF 21 CAPLUS COPYRIGHT 2003 ACS
Full Text
AN 2002:888857 CAPLUS
DN 137:372374
TI Aromatics-free diesel **fuel emulsions** containing plant-derived glyceridic oils and fatty esters
IN Castiglioni, Antonio M.; Giupponi, Massimiliano; Lombardi, Alessandro
PA Exxonmobil Chemical Patents Inc., USA
SO PCT Int. Appl., 18 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM C10L001-02

STN Columbus

ICS C10L001-32
 CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002092731	A1	20021121	WO 2002-EP4880	20020503

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI IT 2001-MI1002 A 20010516

AB Aroms.-free diesel **fuels** consist of a non-arom. hydrogenated hydrocarbon component (esp. paraffins, isoparaffins, and cycloparaffins) 100, a plant or animal oil (or derived fatty acid ester) 1-50, water 0-30, and surfactants and stabilizers ≤4 vol. parts. The hydrocarbon component has a boiling range 140-230°, flammability point 30-150°, and a distn. range boiling width of 5-50° (e.g., a narrow-boiling hydrogenated gas oil). Suitable plant oils are selected from **rapeseed** oil, sunflower oil, **soybean** oil, and palm oil, and their corresponding Me esters. Suitable stabilizers and surfactants include nonionic surfactants (preferably ethoxylated alcs.), ethoxylated (and/or propoxylated) polyols, sorbitan monooleate, ethylene glycol, and polyethylene glycol C16-18-alkyl ethers.

ST diesel **fuel** glyceridic oil **emulsion**; plant glyceridic oil methyl ester diesel **fuel emulsion**; gas oil glyceridic **emulsion** diesel **fuel**

IT Polyoxyalkylenes, uses
 RL: NUU (Other use, unclassified); USES (Uses)
 (C16-18-alkyl ethers, surfactants, for diesel **fuel** substitutes; aroms.-free diesel **fuel emulsions** contg. plant-derived glyceridic oils and fatty esters)

IT Glycerides, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (animal, diesel **fuel** substitutes; aroms.-free diesel **fuel emulsions** contg. plant-derived glyceridic oils and fatty esters)

IT Diesel **fuel** substitutes
 (aroms.-free diesel **fuel emulsions** contg. plant-derived glyceridic oils and fatty esters)

IT Palm oil
 Rape oil
 Soybean oil
 Sunflower oil
 RL: TEM (Technical or engineered material use); USES (Uses)
 (diesel **fuel** substitutes; aroms.-free diesel **fuel emulsions** contg. plant-derived glyceridic oils and fatty esters)

IT **Emulsions**
 (diesel **fuel**, substitutes; aroms.-free diesel **fuel emulsions** contg. plant-derived glyceridic oils and fatty esters)

IT Diesel **fuel**
 (**emulsions**, substitutes; aroms.-free diesel **fuel emulsions** contg. plant-derived glyceridic oils and fatty esters)

IT Alcohols, uses
 RL: NUU (Other use, unclassified); USES (Uses)

STN Columbus

(ethoxylated, surfactants, for diesel fuel substitutes;
aroms.-free diesel fuel emulsions contg.
plant-derived glyceridic oils and fatty esters)

IT Gas oils
(hydrocarbon component, diesel fuel substitutes; aroms.-free
diesel fuel emulsions contg. plant-derived
glyceridic oils and fatty esters)

IT Alkanes, uses
Cycloalkanes
Isoalkanes
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrocarbon component, diesel fuel substitutes; aroms.-free
diesel fuel emulsions contg. plant-derived
glyceridic oils and fatty esters)

IT Fatty acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(palm-oil, Me esters, diesel fuel substitutes; aroms.-free
diesel fuel emulsions contg. plant-derived
glyceridic oils and fatty esters)

IT Fatty acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(plant oils, Me esters, diesel fuel substitutes; aroms.-free
diesel fuel emulsions contg. plant-derived
glyceridic oils and fatty esters)

IT Glycerides, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(plant, diesel fuel substitutes; aroms.-free diesel
fuel emulsions contg. plant-derived glyceridic oils
and fatty esters)

IT Alcohols, uses
RL: NUU (Other use, unclassified); USES (Uses)
(polyhydric, ethoxylated, propoxylated, surfactants, for diesel
fuel substitutes; aroms.-free diesel fuel
emulsions contg. plant-derived glyceridic oils and fatty
esters)

IT Fatty acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(rape-oil, Me esters, diesel fuel substitutes; aroms.-free
diesel fuel emulsions contg. plant-derived
glyceridic oils and fatty esters)

IT Fatty acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(soya, Me esters, diesel fuel substitutes;
aroms.-free diesel fuel emulsions contg.
plant-derived glyceridic oils and fatty esters)

IT Fatty acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(sunflower-oil, Me esters, diesel fuel substitutes;
aroms.-free diesel fuel emulsions contg.
plant-derived glyceridic oils and fatty esters)

IT 107-21-1, Ethylene glycol, uses 1338-43-8, Sorbitan monooleate
RL: NUU (Other use, unclassified); USES (Uses)
(stabilizer, diesel fuel substitutes; aroms.-free diesel
fuel emulsions contg. plant-derived glyceridic oils
and fatty esters)

IT 25322-68-3D, POLYETHYLENE GLYCOL, C16-18-alkyl ethers
RL: NUU (Other use, unclassified); USES (Uses)
(surfactants, for diesel fuel substitutes; aroms.-free diesel
fuel emulsions contg. plant-derived glyceridic oils
and fatty esters)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

STN Columbus

- (1) Caterpillar Inc; WO 9963026 A 1999 CAPLUS
- (2) Johnson, L; US 5520708 A 1996 CAPLUS
- (3) Yakobson, D; US 5506272 A 1996 CAPLUS

L7 ANSWER 7 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2002:573390 CAPLUS

DN 137:127375

TI **Fuel additives in fuel composition for combustion engine**

PA AAE Technologies International Limited, Ire.; Cognis Deutschland G.m.b.H. Co. K.-G.

SO Eur. Pat. Appl., 15 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM C10L001-14

ICS C10L001-10; C10L001-02; C10L001-32; C10L010-02

CC 51-7 (Fossil Fuels, Derivatives, and Related Products)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1227143	A1	20020731	EP 2001-101960	20010129
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI	EP 2001-101960		20010129		
AB	There is described a fuel additive compn. comprising an oleic alkanolamide and an alkoxyated oleic acid. There is also described a fuel compn. comprising a hydrocarbon fuel and a fuel additive comprising an oleic alkanolamide and an alkoxyated oleic acid and also a method of running a combustion engine using the fuel of the invention.				
ST	fuel additive gasoline diesel combustion engine alkanolamide				
IT	Amides, uses RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses) (N-(hydroxyalkyl), oleic; fuel additives in fuel compn. for combustion engine)				
IT	Diesel fuel substitutes (biodiesel ; fuel additives in fuel compn. for combustion engine)				
IT	Fuels (emulsions ; fuel additives in fuel compn. for combustion engine)				
IT	Combustion engines Diesel fuel Diesel fuel additives Fuel additives Gasoline additives (fuel additives in fuel compn. for combustion engine)				
IT	Gasoline RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses) (fuel additives in fuel compn. for combustion engine)				
IT	Emulsions (fuel ; fuel additives in fuel compn. for combustion engine)				
IT	112-80-1, Oleic acid, uses RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses) (alkoxyated; fuel additives in fuel compn. for combustion engine)				
IT	301-02-0D, Alkanol				

STN Columbus

RL: MOA (Modifier or additive use); NUU (Other use, unclassified); USES (Uses)
 (fuel additives in fuel compn. for combustion engine)

IT 64-17-5, Ethanol, uses
 RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
 (fuel additives in fuel compn. for combustion engine)

RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE
 (1) Capelle, A; US 4110283 A 1978
 (2) Henkel Kgaa; DE 2940782 A 1981 CAPLUS
 (3) Kao Corp; EP 0957152 A 1999 CAPLUS
 (4) Pure Energy Corp; WO 9920715 A 1999 CAPLUS
 (5) Pure Energy Corp; WO 0031216 A 2000 CAPLUS
 (6) Teresa, K; WO 9944732 A 1999 CAPLUS
 (7) Thorley, D; WO 9952996 A 1999 CAPLUS
 (8) Univ City; GB 2217229 A 1989 CAPLUS
 (9) Vernon, W; WO 9817745 A 1998 CAPLUS
 (10) Vernon, W; WO 0036055 A 2000 CAPLUS
 (11) Wenzel, D; WO 9935215 A 1999 CAPLUS

L7 ANSWER 8 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2002:558882 CAPLUS
 DN 137:339862

TI Bio-Crude-Oil/diesel oil emulsification: main achievements of the emulsification process and preliminary results of tests on diesel engine

AU Baglioni, P.; Chiaramonti, D.; Bonini, M.; Soldaini, I.; Tondi, G.

CS Consorzio Interuniversitario Sviluppo Sistemi a Grande Interfase, University of Florence, Florence, Italy

SO Progress in Thermochemical Biomass Conversion, [Conference], 5th, Tyrol, Austria, Sept. 17-22, 2000 (2001), Meeting Date 2000, Volume 2, 1525-1539. Editor(s): Bridgwater, A. V. Publisher: Blackwell Science Ltd., Oxford, UK.
 CODEN: 69CXB; ISBN: 0-632-05533-2

DT Conference
 LA English

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)

AB In the context of an increasing use of renewable energy sources, biomass derived pyrolysis oil Bio-Crude-Oil (BCO) has potential to replace fuel oil or diesel in many applications such as boilers, turbines and alternative engines for electricity prodn. However, technol. development for BCO upgrading in order to improve its utilization is still a problem to be solved. This paper describes the main results of a research project (supported by the European Commission, DG XII, JOULE Program) aimed at the development of a low-cost phys.-chem. and mech. process for facilitating BCO utilization in small diesel engine units. This process is based on the prepn. of an emulsion between BCO and diesel fuel. BCO and diesel fuel are not miscible, therefore a third component has to be added to obtain a stable emulsion. This third component is called emulsifier (or surfactant). It changes the interfacial properties of the system avoiding (or delaying) the emulsion breaking. The developed emulsions, based on different BCO in terms of feedstock and prodn. facility, have been tested in a conventional small size Diesel unit (6.25 kW) at Pasquali Macchine Agricole (Italy). These tests were aimed at assessing combustion quality, operating performances and emission levels of the diesel engine fueled with the BCO/diesel oil emulsion: some not structural modifications were made on the engine, mainly adding of components for insulating and cooling.

ST biodiesel blend diesel fuel

STN Columbus

IT Diesel fuel

(Bio-Crude-Oil/diesel oil emulsification main achievements and preliminary results of tests on diesel engine)

IT Diesel fuel substitutes

(biodiesel; Bio-Crude-Oil/diesel oil emulsification main achievements and preliminary results of tests on diesel engine)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; Proceedings of the "10th European Conference Technology Exhibition Biomass for Energy and Industry" 1998
- (2) Anon; Progress reports 2000, Contract JOR3-CT98-0307
- (3) Anon; Progress reports 2000
- (4) Bio-Energy Research Group; PyNE Newsletter
- (5) Bridgwater, A; Fast Pyrolysis of Biomass: a handbook 1999
- (6) Leech, J; Biomass gasification and pyrolysis. State of the art and future prospects 1997, P495

L7 ANSWER 9 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2002:539576 CAPLUS

DN 137:111249

TI Fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives

IN Pearson, Graeme Richard; Morrison, John David

PA Megachem Pty Ltd., Australia

SO PCT Int. Appl., 47 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM B01F017-34

ICS B01F017-36; C06B047-14; C06B023-00

CC 50-2 (Propellants and Explosives)

Section cross-reference(s): 33

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002055184	A1	20020718	WO 2002-AU30	20020111
<p>W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM</p> <p>RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG</p>				

PRAI AU 2001-2539 A 20010112

AB Emulsifiers for stabilizing water-in-oil **emulsion** explosives (with crystal habit modifiers for prevention of crystn. of inorg. nitrates) are prepd. by reaction of fatty acids with hexitols and pentitols (or their cyclic or bicyclic anhydrides) to form esters that are then reacted with other agents to react with the free acid groups. The emulsifiers are formed by reaction of: (1) 40-70 wt.% of fatty acid esters of the above monosaccharides, (2) 5-25 wt.% of the other multifunctional reactive agents, and (3) 20-45 wt.% of a third reactive agent that has three or more reactive functional groups capable of reacting with the other multifunctional reactive agents. Suitable examples of component (2) include dicarboxylic and tricarboxylic acids (and their anhydrides), dimer acids, and trimer acids; suitable examples of component (3) are C8-40 structures such as castor oil, epoxidized or hydrogenated castor oil, epoxidized soybean oil, epoxidized linseed oil, tri(alkylol)propane

STN Columbus

- triesters of mono- or polyunsatd. fatty acids, pentaerythritol esters, dipentaerythritol hexaoleate, and polyglycerol polyricinoleate. The fuel phase is typically inorg. nitrate salts, such as NH_4NO_3 , $\text{Ca}(\text{NO}_3)_2$, and NaNO_3 .
- ST emulsifier monosaccharide fatty acid ester **emulsion** explosive; hexitol fatty acid ester emulsifier **emulsion** explosive; pentose fatty acid ester emulsifier **emulsion** explosive; amide fatty acid ester emulsifier **emulsion** explosive
- IT Lecithins
 RL: MOA (Modifier or additive use); USES (Uses)
 (Lipotin 100UB, **emulsion** explosives contg.; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Amides, uses
 RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (N,N-bis(hydroxyethyl), reaction products with fatty acids and sorbitan sesquioleate, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Alcohols, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (amino, derivs., reaction products with fatty acid esters with monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Alcohols, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (amino, reaction products, with fatty acid esters with monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Alditols
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (anhydrohexitols, esters with fatty acids, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Alditols
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (anhydropentitols, esters with fatty acids, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Diesel fuel substitutes
 (biodiesel, **emulsion** explosives contg.; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Acid halides
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (chlorides, fatty acid, reaction products with fatty acids and monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Anhydrides
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (cyclic, esters with monosaccharides; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Amines, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (cyclic, reaction products with fatty acid esters with monosaccharides,

STN Columbus

- emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Amines, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (cyclic, secondary, reaction products with fatty acid esters with monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Amines, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (diamines, reaction products, with fatty acid esters with monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Isocyanates
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (diisocyanates, reaction products with fatty acids esters with hexitols (or pentitols), emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (dimer acids, esters, with monosaccharides; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Hydrocarbon oils
 RL: MOA (Modifier or additive use); USES (Uses)
 (**emulsion** explosives contg. Prorex 36; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Diesel fuel
 (**emulsion** explosives contg.; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Explosives
 (**emulsion**; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Castor oil
 Linseed oil
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (epoxidized, reaction products with fatty acids and monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Soybean oil
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (epoxidized, reaction products, with fatty acids and monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Pentoses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (esters with fatty acids, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Alditols
 Monosaccharides
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (esters, with fatty acids, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)

STN Columbus

- IT Glycols, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (esters, with fatty acids, hexitols (or pentitols), derivs., emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
 RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (esters, with sorbitan, adipic acid, and castor oil; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (esters, with tri(alkylol)propane, esters with fatty acids, hexitols (or pentitols), derivs., emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Alcohols, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (ether, esters with fatty acids, hexitols (or pentitols), derivs., emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Anhydrides
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (fatty acid, reaction products with fatty acids and monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Emulsifying agents
 Transesterification
 (fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (hexitol and pentitol esters, reaction products, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Carbohydrates, uses
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (hexitols, esters with fatty acids, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Castor oil
 RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (hydrogenated, reaction products with fatty acids and monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
 RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (mixed esters with sorbitan, vegetable-oil Me esters, and tallow Me esters; emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Amidation
 (of fatty acid esters with monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)

STN Columbus

- IT Castor oil
Glycerides, uses
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(reaction products, with fatty acids and monosaccharides, emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(soya, Me esters, **biodiesel**, **emulsion** explosives contg.; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(tallow, Me esters, mixed esters with sorbitan, vegetable-oil Me esters, and oleic acid; emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Anhydrides
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(tricarboxylic acids, esters with monosaccharides; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(unsatd., esters, with tri(alkylol)propane, esters with fatty acids, hexitols (or pentitols), derivs., emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(unsatd., trimers, esters with monosaccharides; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT Fatty acids, uses
RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(vegetable-oil, Me esters, reaction products with sorbitan fatty esters, stearic acid, and sorbitol; emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT 50852-11-4, Naphthalenesulfonate
RL: MOA (Modifier or additive use); USES (Uses)
(Galoryl AT 725, **emulsion** explosives contg.; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT 25852-26-0, Naphthalene-formaldehyde copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(emulsifiers contg.; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT 1338-43-8, Sorbitan monooleate
RL: TEM (Technical or engineered material use); USES (Uses)
(emulsifiers contg.; in synthesis of fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT 57-11-4DP, Stearic acid, reaction products with vegetable-oil Me esters, sorbitol, and sorbitan esters 64-19-7DP, Acetic acid, reaction products with vegetable-oil Me esters, sorbitol, and sorbitan esters 112-80-1DP, Oleic acid, mixed esters with sorbitan, vegetable oil Me esters, and tallow Me esters 7664-38-2DP, Phosphoric acid, reaction products with

STN Columbus

- vegetable-oil Me esters, sorbitol, and sorbitan esters 8007-43-ODP, Sorbitan sesquioleate, esters with trimer acids 8007-43-ODP, Sorbitan sesquioleate, esters with trimer acids, bis(hydroxyethyl) amides 8007-43-ODP, Sorbitan sesquioleate, reaction products with castor oil and maleic anhydride 8007-43-ODP, Sorbitan sesquioleate, reaction products with castor oil and maleic anhydride, bis(hydroxyethyl) amides 8007-43-ODP, Sorbitan sesquioleate, reaction products with castor oil and trimellitic anhydride 8007-43-ODP, Sorbitan sesquioleate, reaction products with castor oil and trimellitic anhydride, bis(hydroxyethyl) amides 8007-43-ODP, Sorbitan sesquioleate, reaction products with hydrogenated castor oil and maleic anhydride 8007-43-ODP, Sorbitan sesquioleate, reaction products with hydrogenated castor oil and maleic anhydride, bis(hydroxyethyl) amides 8007-43-ODP, Sorbitan sesquioleate, reaction products with maleic anhydride, polymers 8007-43-ODP, Sorbitan sesquioleate, reaction products with maleic anhydride, polymers, bis(hydroxyethyl) amides
- RL: MOA (Modifier or additive use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
- (emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT 85-44-9DP, Phthalic anhydride, esters with fatty acids and hexitols (or pentitols) 97-73-4DP, Lactic acid anhydride, esters with fatty acids and hexitols (or pentitols) 98-88-4DP, Benzoyl chloride, reaction products with fatty acid esters with monosaccharides 103-80-ODP, Phenylacetyl chloride, reaction products with fatty acid esters with monosaccharides 110-15-6DP, Succinic acid, esters with fatty acids and hexitols (or pentitols) 110-16-7DP, Maleic acid, esters with fatty acids and hexitols (or pentitols) 111-20-6DP, Sebacic acid, esters with fatty acids and hexitols (or pentitols) 111-41-1DP, reaction products with fatty acid esters with monosaccharides 111-42-2DP, Diethanolamine, reaction products with fatty acid esters with hexitols and pentitols 115-77-5DP, Pentaerythritol, esters, esters with fatty acids, hexitols (or pentitols), derivs., 124-04-9DP, Adipic acid, esters with fatty acids and hexitols (or pentitols) 141-82-2DP, Malonic acid, esters with fatty acids and hexitols (or pentitols) 144-62-7DP, Oxalic acid, esters with fatty acids and hexitols (or pentitols) 552-30-7DP, Trimellitic anhydride, esters with fatty acids and hexitols (or pentitols) 645-45-4DP, Benzenepropanoyl chloride, reaction products with fatty acid esters with monosaccharides 7664-41-7DP, Ammonia, reaction products with fatty acid esters with monosaccharides 12441-09-7DP, Sorbitan, mixed fatty acid esters, reaction products with trimer acids and diethanolamine 26266-63-7DP, 1,3-Isobenzofurandione, tetrahydro-, esters with fatty acids and hexitols (or pentitols) 70984-13-3DP, Dipentaerythritol hexakisoleate, esters with fatty acids, hexitols (or pentitols), derivs., 167547-81-1DP, esters with fatty acids, hexitols (or pentitols), derivs.,
- RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
- (emulsifiers; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT 162355-09-1, Pegasol R 150 443462-49-5, Galoryl AT 725
- RL: MOA (Modifier or additive use); USES (Uses)
- (**emulsion** explosives contg.; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT 6484-52-2, Ammonium nitrate, uses 7631-99-4, Sodium nitrate, uses 10031-35-3, Nitric acid, calcium salt, monohydrate 10043-01-3, Aluminum sulfate 10124-37-5, Calcium nitrate
- RL: TEM (Technical or engineered material use); USES (Uses)
- (**emulsion** explosives contg.; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)
- IT 8007-43-0P, Sorbitan sesquioleate
- RL: PUR (Purification or recovery); PREP (Preparation)
- (purifn. of; in synthesis of fatty acid-hexitol (or pentitol) esters

STN Columbus

and amides as emulsifiers for **emulsion** explosives)

IT 149532-32-1D, Unidyme 60, reaction products with fatty acid esters with hexitols and pentitols

RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(trimer acid; fatty acid-hexitol (or pentitol) esters and amides as emulsifiers for **emulsion** explosives)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Briggs; US 4892806 A 1990 CAPLUS

(2) Diener; US 6063954 A 2000 CAPLUS

(3) Eastman Kodak Company; EP 0688781 B1 1995 CAPLUS

(4) The Lubrizol Corporation; WO 0152976 A2 2001 CAPLUS

L7 ANSWER 10 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2002:49570 CAPLUS

DN 136:169975

TI The effects of ethanol content and emulsifying agent concentration on the stability of vegetable oil-ethanol **emulsions**

AU Xu, Qingyi; Nakajima, Mitsutoshi; Nabetani, Hiroshi; Iwamoto, Satoshi; Liu, Xinqi

CS National Food Research Institute, Tsukuba, 305-8642, Japan

SO Journal of the American Oil Chemists' Society (2001), 78(12), 1185-1190
CODEN: JAOCA7; ISSN: 0003-021X

PB AOCS Press

DT Journal

LA English

CC 51-9 (Fossil Fuels, Derivatives, and Related Products)
Section cross-reference(s): 45, 46, 52, 66

AB In vegetable oil-ethanol **emulsions** ethanol is the polar phase and vegetable oil is the nonpolar phase. The primary advantage of vegetable oil-ethanol **emulsions** over conventional water-oil **emulsions** is that they enable the incorporation of water- and oil-insol. or poorly sol. functional compds. and/or drugs into **emulsions**. A no. of nonionic surfactants were used to select appropriate stabilizers for stable vegetable oil-ethanol **emulsions**. The authors found decaglycerol mono-oleate (MO750) to be the best stabilizer for ethanol-in-oil (E/O) **emulsions**. The effects of ethanol content and of emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsions** were examd. with MO750. After emulsification, two turbid layers formed simultaneously when ethanol content exceeded 20%. The top layers (oil-in-ethanol **emulsions**; O/E **emulsions**) were very unstable, whereas the stability of the bottom layers (E/O **emulsions**) depended on the ethanol content. The stability of E/O **emulsions** is closely related to the effective concn. of MO750 aggregates, which play an important role in the film thickness stability of interfacial films formed by surfactant aggregates. Instability of E/O **emulsion** at 5% MO750 is probably due to the polydispersity (i.e., nonuniform size and shape) of MO750 aggregates at high MO750 concn. E/O **emulsions** prepd. with 0.1, 0.5, and 1% MO750 were stable, suggesting that the interfacial films formed were effective in protecting the droplets against coalescence and Ostwald ripening.

ST ethanol vegetable oil **emulsion** oleic acid ester stability surfactant

IT Diesel **fuel** substitutes
(**biodiesel**; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Dispersing agents
Dispersion (of materials)
Hydrophile-lipophile balance value
(effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Lecithins

STN Columbus

RL: MOA (Modifier or additive use); USES (Uses)
 (egg yolk; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Fatty acids, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (esters, C6-C18 esters with polyglycerol; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Drops
 (microdroplets; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Emulsifying agents
 (nonionic; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Sunflower oil
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (oleic acid-high; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Ostwald ripening
 (prevention of; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Lecithins
 RL: MOA (Modifier or additive use); USES (Uses)
 (soya; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT Fats and Glyceridic oils, processes
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (vegetable; effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT 1338-39-2, Span 20 1338-41-6, Span 60 1338-43-8, Span 80 9005-65-6, Tween 80 9005-66-7, Tween 40 9005-67-8, Tween 60 9005-70-3, Tween 85 11094-60-3, SY-Glyster DAO 750 25496-72-4, Glycerol monooleate 26266-57-9, Span 40 26266-58-0, Span 85 34406-66-1, SY-Glyster ML 750 51033-38-6, ML500 51033-41-1, MCA750 71012-10-7, SY-Glyster MO 310 75798-42-4, SY-Glyster ML 310 79665-92-2, MO500 103230-29-1, PO310 104934-17-0, PO500 186912-83-4, MO750
 RL: MOA (Modifier or additive use); USES (Uses)
 (effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT 64-17-5, Ethanol, processes
 RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
 (effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

IT 7732-18-5, Water, processes
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (effect of ethanol content and emulsifying agent concn. on the stability of vegetable oil-ethanol **emulsion**)

RE.CNT 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

- (1) Agboola, S; J Sci Food Agric 1996, V72, P448 CAPLUS
- (2) Anon; Kagaku Binran (Chemistry Handbook: in Japanese), 3rd edn 1984, VII, P52
- (3) Borwankar, R; Food Emulsions and Foams 1999, P45 CAPLUS
- (4) Chidambaram, N; AAPS PharmSci 2000, V2(3) CAPLUS
- (5) Chidambaram, N; AAPS PharmSci 2000, V2(3) CAPLUS
- (6) Dickinson, E; Colloids Surf 1999, V12, P139 CAPLUS
- (7) Dickinson, E; J Colloid Interface Sci 1998, V197, P133 CAPLUS
- (8) Faergemand, M; Int Dairy J 1998, V8, P715 CAPLUS

STN Columbus

- (9) Ivanov, I; Colloids Surf A 1997, V128, P155 CAPLUS
- (10) Knothe, G; American Chemical Society Symposium Series 1997, 666, P196
- (11) Kralchevsky, P; Langmuir 1990, V6, P1180
- (12) Nabetani, H; Proceedings of the Third International Soybean Processing and Utilization Conference 2000, P686
- (13) Nikolov, A; Colloids Surf A 1996, V118, P221 CAPLUS
- (14) Nikolov, A; Colloids Surf A 1997, V128, P243 CAPLUS
- (15) Nikolov, A; Colloids Surf A 1997, V123-124, P375 CAPLUS
- (16) Nikolov, A; J Colloid Interface Sci 1989, V133, P1 CAPLUS
- (17) Nikolov, A; J Colloid Interface Sci 1989, V133, P13 CAPLUS
- (18) Nikolov, A; Prog Colloids Polym Sci 1990, V82, P87 CAPLUS
- (19) Pearce, K; J Agric Food Chem 1978, V26, P716 CAPLUS
- (20) Xu, Q; J Colloid Interface Sci 2001, V242, P443 CAPLUS

L7 ANSWER 11 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2001:921628 CAPLUS
 DN 136:234304
 TI Biofuels derived from vegetable oils and fats
 AU Knothe, Gerhard; Dunn, Robert O.
 CS Agricultural Research Service, National Center for Agricultural Utilization Research, US Department of Agriculture, Peoria, IL, 61604, USA
 SO Oleochemical Manufacture and Applications (2001), 106-163. Editor(s): Gunstone, Frank D.; Hamilton, Richard J. Publisher: Sheffield Academic Press, Sheffield, UK.
 CODEN: 69CCQZ
 DT Conference; General Review
 LA English
 CC 51-0 (Fossil Fuels, Derivatives, and Related Products)
 Section cross-reference(s): 45, 52
 AB A review on the use of vegetable oil-based diesel **fuels**, particularly in the form of esters (**biodiesel**). Topics discussed include sources and prodn. of such **fuels**, general comparison of **fuels** from vegetable oils and animal fats, process economics, regulatory issues, history and development, combustion of and emissions from **biodiesel fuels**, properties of **biodiesel** (e.g., low-temp. properties and storage stability), blending with conventional diesel **fuels**, transesterification, use of waste vegetable oils, pyrolyzed vegetable oils, use of **microemulsions**, and outlook for **biodiesel fuels**. Although vegetable oil-based **fuels** cannot replace all petroleum-based diesel **fuels**, they play an important role among the alternative **fuels** and contribute to the goal of energy independence and security.
 ST review diesel **fuel** vegetable oil **biodiesel**; transesterification vegetable oil **biodiesel** review
 IT Fatty acids, preparation
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
 (Et esters, **biodiesel**; **biodiesel fuels** derived from vegetable oils and fats)
 IT Fatty acids, preparation
 RL: IMF (Industrial manufacture); PRP (Properties); PREP (Preparation)
 (Me esters, **biodiesel**; **biodiesel fuels** derived from vegetable oils and fats)
 IT Transesterification
 (**biodiesel fuels** derived from vegetable oils and fats)
 IT Glycerides, reactions
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
 (**biodiesel fuels** derived from vegetable oils and fats)
 IT Diesel **fuel** substitutes
 (**biodiesel**; **biodiesel fuels** derived from

STN Columbus

vegetable oils and fats)

IT Diesel fuel additives
(cetane improvers, for **biodiesel**; **biodiesel**
fuels derived from vegetable oils and fats)

IT Combustion
(of **biodiesel** fuels; **biodiesel**
fuels derived from vegetable oils and fats)

IT Thermal decomposition
(of glycerides; **biodiesel** fuels derived from
vegetable oils and fats)

IT Fats and Glyceridic oils, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)
(vegetable, waste, glyceride source; **biodiesel** fuels
derived from vegetable oils and fats)

RE.CNT 279 THERE ARE 279 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Ahn, E; Sep Sci Technol 1995, V30, P2021 CAPLUS
- (2) Ahouissoussi, N; Industrial Uses of Agricultural Materials 1995, P35
- (3) Ali, Y; Bioresour Technol 1994, V47, P131 CAPLUS
- (4) Ali, Y; Bioresour Technol 1994, V50, P153 CAPLUS
- (5) Ali, Y; Bioresour Technol 1995, V52, P185 CAPLUS
- (6) Ali, Y; Bioresour Technol 1995, V52, P237 CAPLUS
- (7) Ali, Y; J Am Oil Chem Soc 1995, V72, P1557 CAPLUS
- (8) Andrews, A; Energy Agric 1984, V3, P323 CAPLUS
- (9) Anon; Biodiesel Report 1996
- (10) Anon; INFORM 1999, V10, P886
- (11) Anon; Oil Gas J 2000, V98, P53
- (12) Anon; Oil World 2001, V44, P71
- (13) Anon; www.unitedsoybean.org 2000, V1(5), P2
- (14) Applewhite, T; Kirk-Othmer, Encyclopedia of Chemical Technology, 3rd edn
1980, V9, P795 CAPLUS
- (15) Avella, F; Riv Combust 1992, V46, P181 CAPLUS
- (16) Bacon, D; Beyond the Energy Crisis 1981, V3, P1525
- (17) Bagby, M; ASAE Paper No 87-1583, 1987 Int Winter Meeting ASAE 1987
- (18) Bagby, M; Proc 9th Int Conf Jojoba Uses 3rd Int Conf New Industr Crops
Prod 1996, P220
- (19) Bagley, S; Environ Sci Technol 1998, V32, P1183 CAPLUS
- (20) Bailer, J; Fresenius' J Anal Chem 1991, V340, P186 CAPLUS
- (21) Batel, W; Grundl Landtechnik 1980, V30, P40
- (22) Bessee, G; Soc Automot Eng, [Spec Publ] 1997, VSP-1274, P221 CAPLUS
- (23) Bettis, B; Agron J 1982, V74, P335 CAPLUS
- (24) Billaud, F; J Am Oil Chem Soc 1995, V72, P1149 CAPLUS
- (25) Bohmke, U; EP 543356 1993 CAPLUS
- (26) Bondioli, P; J Am Oil Chem Soc 1995, V72, P699 CAPLUS
- (27) Bondioli, P; Riv Ital Sostanze Grasse 1992, V69, P467 CAPLUS
- (28) Bondioli, P; Riv Ital Sostanze Grasse 1992, V69, P7 CAPLUS
- (29) Bondioli, P; Riv Ital Sostanze Grasse 1994, V71, P287 CAPLUS
- (30) Bondioli, P; Riv Ital Sostanze Grasse 1996, V73, P349 CAPLUS
- (31) Boocock, D; Biomass Bioenergy 1996, V11, P43 CAPLUS
- (32) Boocock, D; J Am Oil Chem Soc 1996, V73, P1247 CAPLUS
- (33) Boocock, D; J Am Oil Chem Soc 1998, V75, P1167 CAPLUS
- (34) Borgelt, S; Liq Fuels, Lubr Addit Biomass, Proc Altern Energy Conf 1994,
P67 CAPLUS
- (35) Bormann, K; DE DD287048 1991
- (36) Boruff, P; Trans ASAE 1982, V25, P47 CAPLUS
- (37) Braun, D; Alternative fuel blends and diesel engine tests, Vegetable Oil
Fuels 1982, P294
- (38) Breccia, A; J Microwave Power Electromagn Energy 1999, V34, P3
- (39) Bruwer, J; 1980 National Energy Symposium 1980, P11
- (40) Bruwer, J; 1980 Symposium 1980, P7
- (41) Bruwer, J; Energy Biomass Conf, 1st 1981, EUR 1981, EUR 7091, P934

STN Columbus

- (42) Bunger, J; J Mutation Res 1998, V415, P13 CAPLUS
- (43) Bunger, J; Mutagenesis 2000, V15, P391 CAPLUS
- (44) Canakci, M; Trans ASAE 1999, V42, P1203 CAPLUS
- (45) Canakci, M; Trans ASAE 1999, V42, P1565 CAPLUS
- (46) Carraro, E; J Environ Pathol, Toxicol Oncol 1997, V16, P101 MEDLINE
- (47) Cecchi, G; Rev Fr Corps Gras 1987, V34, P397 CAPLUS
- (48) Chang, D; J Am Oil Chem Soc 1996, V73, P1549 CAPLUS
- (49) Charpentier, C; Entropie 1987, V23, P27 CAPLUS
- (50) Chavanne, C; BE 422877 1937 CAPLUS
- (51) Chavanne, G; Bull Soc Chim 1943, V10, P52 CAPLUS
- (52) Choo, Y; Chem Ind 2000, P530 CAPLUS
- (53) Choo, Y; Lipid Technologies and Applications 1997, P771 CAPLUS
- (54) Clark, S; J Am Oil Chem Soc 1984, V61, P1632 CAPLUS
- (55) Claude, S; Lipid Technology Newsletter 2000, V6, P105
- (56) Clevenger, M; Trans ASAE 1988, V31, P381
- (57) Clothier, P; Chem Soc Rev 1993, V22, P101 CAPLUS
- (58) Connemann, J; Fat Sci Technol 1994, V96, P536
- (59) Crookes, R; Arch Combust 1993, V13, P57 CAPLUS
- (60) Cruz, J; Resour Conserv 1981, V6, P69 CAPLUS
- (61) Cvengros, J; Bioresour Technol 1996, V55, P145 CAPLUS
- (62) Cvengros, J; J Am Oil Chem Soc 1994, V71, P1349 CAPLUS
- (63) Cvengrosova, Z; Petroleum Coal 1997, V39, P36 CAPLUS
- (64) Da Rocha, F; Fuel 1993, V72, P543
- (65) Darcey, C; Trans ASAE 1983, V26, P1626 CAPLUS
- (66) Davies, B; WO 9410267 1994 CAPLUS
- (67) de, B; Fett/Lipid 1999, V101, P404 CAPLUS
- (68) de Filippis, P; J Am Oil Chem Soc 1995, V72, P1399 CAPLUS
- (69) de Guzman, D; Chem Market Reporter 2001, V259, P10
- (70) Demmering, G; DE 4040317 1992 CAPLUS
- (71) Diesel, R; Engineering 1912, V93, P395 CAPLUS
- (72) Diesel, R; Proc Inst Mech Eng 1912, P179 CAPLUS
- (73) Dimmig, T; Chem Tech (Leipzig) 1999, V51, P326 CAPLUS
- (74) Dos Anjos, J; Appl Catal 1983, V5, P299 CAPLUS
- (75) Douros, T; Erdoel, Erdgas, Kohle 1987, V103, P228 CAPLUS
- (76) Dunn, R; J Dispers Sci Technol 1992, V13, P77 CAPLUS
- (77) Dunn, R; J Dispers Sci Technol 1993, V14, P1 CAPLUS
- (78) Freedman, B; J Am Oil Chem Soc 1986, V63, P1370 CAPLUS
- (79) Freedman, B; J Am Oil Chem Soc 1986, V63, P1375 CAPLUS
- (80) Freedman, B; J Am Oil Chem Soc 1989, V66, P1601 CAPLUS
- (81) Freedman, B; J Am Oil Chem Soc 1990, V67, P565 CAPLUS
- (82) Freedman, B; J Am Oil Chem Soc 1990, V66, P595
- (83) Freedman, B; SAE Technical Pap Ser 900343 1990, P9
- (84) Gelbard, G; J Am Oil Chem Soc 1995, V72, P1239 CAPLUS
- (85) Geller, D; Indust Crops Prod 1999, V9, P85 CAPLUS
- (86) Geyer, S; Trans ASAE 1984, V27, P375 CAPLUS
- (87) Glassman, I; Combustion, 3rd edn 1996
- (88) Goering, C; Evaluation of soybean oil-aqueous ethanol microemulsions, Vegetable Oil Fuels 1982, P279 CAPLUS
- (89) Goering, C; J Am Oil Chem Soc 1984, V61, P1638
- (90) Goering, C; Trans ASAE 1982, V25, P1472 CAPLUS
- (91) Goering, C; Trans ASAE 1983, V26, P1602 CAPLUS
- (92) Goodrum, J; Trans ASAE 1982, V25, P897 CAPLUS
- (93) Googin, J; Energy Res 1983, V3, P173 CAPLUS
- (94) Graboski, M; Prog Energy Combust Sci 1998, V24, P125 CAPLUS
- (95) Graille, J; Oleagineux 1982, V37, P421 CAPLUS
- (96) Graille, J; Oleagineux 1985, V40, P271 CAPLUS
- (97) Graille, J; Oleagineux 1986, V41, P457 CAPLUS
- (98) Gryglewicz, S; Bioresour Technol 1999, V70, P249 CAPLUS
- (99) Gunstone, F; Lipid Handbook 2nd edn 1994
- (100) Gusmao, J; Catal Today 1989, V5, P533 CAPLUS
- (101) Gutsche, B; Fett/Lipid 1997, V99, P418 CAPLUS
- (102) Haas, M; J Am Oil Chem Soc 2000, V77, P373 CAPLUS

STN Columbus

- (103) Harrington, K; Biomass 1986, V9, P1 CAPLUS
- (104) Harrington, K; J Am Oil Chem Soc 1985, V62, P1009 CAPLUS
- (105) Hassan, M; J Energy, Heat Mass Transfer 1993, V15, P293 CAPLUS
- (106) Hochhauser, A; Kirk-Othmer, Encyclopedia of Chemical Technology, 4th edn 1994, V12, P341
- (107) Holcapek, M; J Chromatogr, A 1999, V858, P13 CAPLUS
- (108) Howell, S; SAE Technical Pap Ser 971687 in State of Alternative Fuel Technologies 1997, P203 CAPLUS
- (109) Hunter, H; US 5380343 1995 CAPLUS
- (110) Ikwuagwu, O; Industr Crops Prod 2000, V12, P57 CAPLUS
- (111) Isigigur, A; Appl Biochem Biotechnol 1993, V39-40, P89 CAPLUS
- (112) Isigigur, A; Appl Biochem Biotechnol 1994, V45-46, P103 CAPLUS
- (113) Isigigur, A; Appl Biochem Biotechnol 1994, V45-46, P93 CAPLUS
- (114) Kaieda, M; J Bioscience Bioeng 1999, V88, P627 CAPLUS
- (115) Karaosmanoglu, F; Energy Sources 1999, V21, P221 CAPLUS
- (116) Karaosmanoglu, F; Renewable Energy: Technol Environ Proc World Renewable Energy Congr 2nd 1992, V3, P1455 CAPLUS
- (117) Kato, M; Sekiyu Gakkaishi 1992, V35, P115 CAPLUS
- (118) Kaufman, K; Trans ASAE 1984, V27, P1626 CAPLUS
- (119) Kaufmann, H; Fett Seifen Anstrichm 1958, V60, P919 CAPLUS
- (120) Kildiran, G; J Am Oil Chem Soc 1996, V73, P225 CAPLUS
- (121) Klopfenstein, W; J Am Oil Chem Soc 1982, V59, P531 CAPLUS
- (122) Klopfenstein, W; J Am Oil Chem Soc 1985, V62, P1029 CAPLUS
- (123) Knothe, G; ACS Symposium Series 666: Fuels and Chemicals from Biomass 1997, P172 CAPLUS
- (124) Knothe, G; INFORM 1996, V7, P827
- (125) Knothe, G; J Am Oil Chem Soc 1991, V68, P259 CAPLUS
- (126) Knothe, G; J Am Oil Chem Soc 1992, V69, P341 CAPLUS
- (127) Knothe, G; J Am Oil Chem Soc 1998, V75, P1007 CAPLUS
- (128) Knothe, G; J Am Oil Chem Soc 1999, V76, P795 CAPLUS
- (129) Knothe, G; J Am Oil Chem Soc 2000, V77, P489 CAPLUS
- (130) Knothe, G; J Am Oil Chem Soc 2000, V77, P865 CAPLUS
- (131) Knothe, G; SAE Technical Pap Ser 971681 in State of Alternative Fuel Technologies 1997, P127 CAPLUS
- (132) Knothe, G; SAE Technical Paper Series 920194 1992
- (133) Komers, K; Fett/Lipid 1998, V100, P507 CAPLUS
- (134) Korus, R; Polymerization of vegetable oils, (Vegetable Oil Fuels) 1982, P218 CAPLUS
- (135) Krahl, J; Landbauforschung Volkenrode 1994, V44, P182
- (136) Krahl, J; Motortechn Z 1996, V57, P24
- (137) Krahl, J; SAE Tech Pap Ser 961847 1996, P14
- (138) Krahl, J; SAE Tech Pap Ser 962096 1996, P319
- (139) Krawczyk, T; INFORM 1996, V7, P801
- (140) Krisnangkura, K; J Am Oil Chem Soc 1986, V63, P552 CAPLUS
- (141) Ladommatos, N; Fuel 1995, V74, P1083 CAPLUS
- (142) Ladommatos, N; Fuel 1996, V75, P8 CAPLUS
- (143) Lal, K; US 5338471 1994 CAPLUS
- (144) Lal, K; EP 604125 1994 CAPLUS
- (145) Lane, J; Kirk-Othmer, Encyclopedia of Chemical Technology, 3rd Edn 1980, V11, P682
- (146) Last, R; Soc Automot Eng [Spec Publ] 1995, VSP-1093, P9 CAPLUS
- (147) Lechner, M; J High Resolut Chromatogr 1997, V20, P581 CAPLUS
- (148) Lee, I; J Am Oil Chem Soc 1995, V72, P1155 CAPLUS
- (149) Lee, I; J Am Oil Chem Soc 1996, V73, P631 CAPLUS
- (150) Lepori, W; Liq Fuels Renewable Resour, Proc Altern Energy Conf 1992, P89 CAPLUS
- (151) Lewtas, K; WO 9318115 1993 CAPLUS
- (152) Lilly, L; Diesel Engine Reference Book, 1st edn 1980
- (153) Linko, Y; J Biotechnol 1998, V66, P41 CAPLUS
- (154) Lozano, P; Fresenius' J Anal Chem 1996, V354, P319 CAPLUS
- (155) Ma, F; Bioresour Technol 1999, V70, P1 CAPLUS
- (156) Ma, F; Bioresour Technol 1999, V69, P289 CAPLUS

STN Columbus

- (157) Ma, F; Ind Eng Chem Res 1998, V37, P3768 CAPLUS
- (158) Ma, F; Trans ASAE 1998, V41, P1261 CAPLUS
- (159) Mackay, R; Nonionic Surfactants:Physical Chemistry, Surf Sci Ser 1987, V23, P297 CAPLUS
- (160) Mariani, C; Riv Ital Sostanze Grasse 1991, V68, P549 CAPLUS
- (161) Martin, J; EP 587551 1994 CAPLUS
- (162) Masjuki, H; J Energy, Heat Mass Transfer 1994, V16, P295 CAPLUS
- (163) Mason, M; Prepr - Am Chem Soc, Div Pet Chem 1998, V43, P579 CAPLUS
- (164) McBain, M; Solubilization and related phenomena 1955, P179
- (165) McDonald, J; Soc Automot Eng [Spec Publ] 1995, VSP-1093, P191 CAPLUS
- (166) Miller, N; Spill Sci Technol Bull 1997, V4, P17 CAPLUS
- (167) Mills, G; J Inst Energy 1983, V56, P131 CAPLUS
- (168) Mittelbach, M; Bioresour Technol 1996, V56, P7 CAPLUS
- (169) Mittelbach, M; Chromatographia 1993, V37, P623 CAPLUS
- (170) Mittelbach, M; Chromatographia 1996, V42, P431 CAPLUS
- (171) Mittelbach, M; Energy Agric 1983, V2, P369 CAPLUS
- (172) Mittelbach, M; Energy Agric 1985, V4, P207 CAPLUS
- (173) Mittelbach, M; J Am Oil Chem Soc 1990, V92, P145 CAPLUS
- (174) Mittelbach, M; J Am Oil Chem Soc 1990, V67, P168 CAPLUS
- (175) Mittelbach, M; J Am Oil Chem Soc 1999, V76, P545 CAPLUS
- (176) Mittelbach, M; Liq Fuels Renewable Resour, Proc Altern Energy Conf 1992, P74 CAPLUS
- (177) Mittelbach, M; Liq Fuels, Lubr Addit Biomass, Proc Altern Energy Conf 1994, P151 CAPLUS
- (178) Mittelbach, M; Oesterr Chem Z 1989, V90, P147 CAPLUS
- (179) Msipa, C; Trans ASAE 1983, V26, P1669 CAPLUS
- (180) Mudge, S; Spill Sci Technol Bull 1999, V5, P353 CAPLUS
- (181) Mulangala, M; Entropie 1981, V98, P97 CAPLUS
- (182) Muller, M; EP 406684 1991 CAPLUS
- (183) Munavu, R; Kenya J Sci Technol 1984, V5, P45 CAPLUS
- (184) Nagle, N; Appl Biochem Biotechnol 1990, V24-25, P355 CAPLUS
- (185) Nelson, L; INFORM 1995, V6, P509
- (186) Nelson, L; J Am Oil Chem Soc 1996, V73, P1191 CAPLUS
- (187) Nouredдини, H; J Am Oil Chem Soc 1997, V74, P1457 CAPLUS
- (188) Nouredдини, H; J Am Oil Chem Soc 1998, V75, P1775 CAPLUS
- (189) Nunes, P; Rev Inst Fr Pet 1986, V41, P421 CAPLUS
- (190) Nye, M; J Am Oil Chem Soc 1983, V60, P1598 CAPLUS
- (191) Owen, K; Automotive Fuels Reference Book 2nd ed 1995
- (192) Pande, S; Fuel 1990, V69, P437 CAPLUS
- (193) Pestes, M; J Test Eval 1984, V12, P61 CAPLUS
- (194) Peters, R; INFORM 1996, V7, P502
- (195) Peterson, C; Trans ASAE 1983, V26, P322 CAPLUS
- (196) Peterson, C; Trans ASAE 1987, V30, P28 CAPLUS
- (197) Peterson, G; J Am Oil Chem Soc 1984, V61, P1593 CAPLUS
- (198) Plank, C; Fett Wiss Technol 1994, V96, P379 CAPLUS
- (199) Plank, C; J Chromatogr, A 1994, V683, P95 CAPLUS
- (200) Plank, C; J Chromatogr, A 1995, V697, P461 CAPLUS
- (201) Plank, C; J High Resolut Chromatogr 1992, V15, P609 CAPLUS
- (202) Plank, C; J High Resolut Chromatogr 1993, V16, P483 CAPLUS
- (203) Poirier, M; US 5454842 1995 CAPLUS
- (204) Posorske, L; J Am Oil Chem Soc 1984, V61, P1758 CAPLUS
- (205) Prankl, H; Proc Third Liquid Fuel Conference:Liquid Fuels and Industrial Products from Renewable Resources 1996, P191 CAPLUS
- (206) Pryor, R; Trans ASAE 1983, V26, P333 CAPLUS
- (207) Puckett, A; U S Bur Mines, Inform Circ 1948, 7474, P14
- (208) Purcell, D; J Am Oil Chem Soc 1996, V73, P381 CAPLUS
- (209) Rakopoulos, C; Renewable Energy 1992, V2, P327 CAPLUS
- (210) Ranese, A; Industr Crops Prods 1999, V9, P151
- (211) Reed, T; Energy Biomass Wastes 1991, V15, P907 CAPLUS
- (212) Rewolinski, C; J Am Oil Chem Soc 1985, V62, P1120 CAPLUS
- (213) Ricardo Consulting Engineers; Diesel Engine Reference Book, 2nd edn 1998
- (214) Ryan, T; J Am Oil Chem Soc 1984, V61, P1610 CAPLUS

STN Columbus

- (215) Sadeghi-Jorabchi, H; Spectrosc Eur 1994, V6, P16 CAPLUS
- (216) Schmidt, A; Automobiltechn Z 1933, V36, P212 CAPLUS
- (217) Schmidt, A; Erdoel, Erdgas, Kohle 1992, V108, P415 CAPLUS
- (218) Scholl, K; Alternate Fuels: A Decade of Success and Promise 1994, P555
CAPLUS
- (219) Schon, S; US 5004479 1991 CAPLUS
- (220) Schuchardt, U; J Braz Chem Soc 1998, V9, P199 CAPLUS
- (221) Schwab, A; US 4451265 1984 CAPLUS
- (222) Schwab, A; US 4451267 1984 CAPLUS
- (223) Schwab, A; US 4526586 1985 CAPLUS
- (224) Schwab, A; US 4557734 1985 CAPLUS
- (225) Schwab, A; Fuel 1987, V66, P1372 CAPLUS
- (226) Schwab, A; J Am Oil Chem Soc 1988, V65, P1781 CAPLUS
- (227) Schwab, A; J Dispers Sci Technol 1982, V3, P45 CAPLUS
- (228) Schwab, A; J Dispers Sci Technol 1983, V4, P1 CAPLUS
- (229) Schwab, A; J Dispers Sci Technol 1985, V6, P563 CAPLUS
- (230) Selmi, B; J Am Oil Chem Soc 1998, V75, P691 CAPLUS
- (231) Sercheli, R; J Am Oil Chem Soc 1999, V76, P1207 CAPLUS
- (232) Sexton, M; EP 475620 1992 CAPLUS
- (233) Shay, E; Biomass Bioenergy 1993, V4, P227 CAPLUS
- (234) Shimada, Y; J Am Oil Chem Soc 1999, V76, P789 CAPLUS
- (235) Siekmann, R; Proc Vegetable Oil Diesel Fuel, Seminar III, Agricultural
Reviews and Manuals 1983, P163
- (236) Siekmann, R; Vegetable Oil Fuels 1982, P117
- (237) Sii, H; J Am Oil Chem Soc 1995, V72, P905 CAPLUS
- (238) Siler-Marinkovic, S; Fuel 1998, V77, P1389 CAPLUS
- (239) Simkovsky, N; Erdoel, Erdgas, Kohle 1999, V115, P317 CAPLUS
- (240) Simkovsky, N; Fett/Lipid 1998, V100, P534 CAPLUS
- (241) Sims, R; Trans ASAE 1985, V28, P716 CAPLUS
- (242) Srivastava, A; Renew Sust Energy Rev 2000, V4, P111 CAPLUS
- (243) Staat, F; Chem Ind 1994, P863 CAPLUS
- (244) Stage, H; Fett Wiss Technol 1988, V90, P28 CAPLUS
- (245) Stalder, K; Landtechnik 1995, V50, P266
- (246) Starr, M; SAE Tech Pap Ser 972904 1997
- (247) Stournas, S; J Am Oil Chem Soc 1995, V72, P433 CAPLUS
- (248) Stumborg, M; Energy Biomass Wastes 1993, V16, P721 CAPLUS
- (249) Sumera, F; Philipp J Sci 1990, V119, P333 CAPLUS
- (250) Suppes, G; Fuel 1999, V78, P73 CAPLUS
- (251) Tat, M; J Am Oil Chem Soc 2000, V77, P285
- (252) Thompson, J; Trans ASAE 1998, V41, P931 CAPLUS
- (253) Trathnigg, B; J Liquid Chromatogr 1990, V13, P95 CAPLUS
- (254) Vaitilingom, G; Entropie 1991, V27, P39 CAPLUS
- (255) van Den Abeele, M; Bull Agr Congo Belge 1942, V33, P3 CAPLUS
- (256) van Gerpen, J; ASAE paper 996134 1999
- (257) van Gerpen, J; Diesel Engine Reference Book 1998, P89
- (258) Vellguth, G; Grundl Landtechnik 1982, V32, P177
- (259) Vicente, G; Ind Crops Prod 1998, V8, P29 CAPLUS
- (260) Wallace, F; Diesel Engine Reference Book 1998, P3
- (261) Walton, J; Gas Oil Power 1938, V33, P167 CAPLUS
- (262) Watanabe, Y; J Am Oil Chem Soc 2000, V77, P355 CAPLUS
- (263) Weast, R; Handbook of Chemistry and Physics, 66th edn 1985-1986, PD-272
- (264) Wehlmann, J; Fett/Lipid 1999, V101, P249 CAPLUS
- (265) Wenzel, G; Fat Sci Technol 1995, V97, P475 CAPLUS
- (266) Willing, A; Fett/Lipid 1999, V101, P192 CAPLUS
- (267) Wu, W; J Am Oil Chem Soc 1998, V75, P1173 CAPLUS
- (268) Wu, W; J Am Oil Chem Soc 1999, V76, P517 CAPLUS
- (269) Yaginuma, R; Sekiyu Gakkaishi 1999, V42, P173 CAPLUS
- (270) Yean, C; J Appl Organomet Chem 2000, V14, P304 CAPLUS
- (271) Yu, L; J Am Oil Chem Soc 1998, V75, P1821 CAPLUS
- (272) Zaher, F; Energy Sources 1993, V15, P499 CAPLUS
- (273) Zaher, F; Grasas Aceites (Seville) 1990, V41, P82 CAPLUS
- (274) Zemanek, G; Fett/Lipid 1999, V101, P321 CAPLUS

STN Columbus

- (275) Zhang, X; Trans ASAE 1998, V41, P1423 CAPLUS
- (276) Zhang, Y; Soc Automot Eng, [Spec Publ] SP 1996, VSP-1160, P1 CAPLUS
- (277) Ziejewski, M; J Am Oil Chem Soc 1984, V61, P1620 CAPLUS
- (278) Ziejewski, M; SAE Tech Pap Ser 911765 1991
- (279) Zubik, J; Trans ASAE 1984, V27, P1251

L7 ANSWER 12 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

- AN 2001:390594 CAPLUS
- DN 135:154933
- TI Renewable vegetable oil-based alternative **fuels** for diesel engines. Part I.
- AU Matyschok, Helmut
- CS Inst. Technol. Org. i Tworzyw Sztucznych, Politech. Wroclaw., Wroclaw, Pol.
- SO Chemik (2001), 54(3), 59-65
CODEN: CHGLAY; ISSN: 0009-2886
- PB Zaklad Wydawniczy CHEMPRESS
- DT Journal; General Review
- LA Polish
- CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 45, 59
- AB A review with a no. of refs. In the first part of the paper presented in this issue, vegetable oils, **microemulsion** systems and **fuel** blends are discussed. In the second part to be published in Chemik 4/2001 will be discussed: transesterification, and economic and ecol. aspects of producing and using vegetable oils and their derivs. as a renewable alternative diesel **fuel**.
- ST diesel **fuel** vegetable oil transesterification review
- IT Diesel **fuel** substitutes
(**biodiesel**; vegetable oil-based alternative **fuels** for diesel engines)
- IT Transesterification
(vegetable oil-based alternative **fuels** for diesel engines)
- IT Fatty acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(vegetable-oil, esters; vegetable oil-based alternative **fuels** for diesel engines)
- IT Fats and Glyceridic oils, uses
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(vegetable; vegetable oil-based alternative **fuels** for diesel engines)

L7 ANSWER 13 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

- AN 2001:256489 CAPLUS
- DN 134:328850
- TI Performance of a diesel engine using transesterified **fuel** from vegetable oil (effects of water emulsification)
- AU Yoshimoto, Yasufumi; Onodera, Masayuki; Tamaki, Hiroya
- CS Dept. of Mechanical and Control Engineering, Niigata Institute of Technology, Kashiwazaki, Niigata, 945-1195, Japan
- SO Nippon Kikai Gakkai Ronbunshu, B-hen (2001), 67(653), 264-271
CODEN: NKGBDD; ISSN: 0387-5016
- PB Nippon Kikai Gakkai
- DT Journal
- LA Japanese
- CC 51-12 (Fossil Fuels, Derivatives, and Related Products)
- AB This paper investigates engine performance with an emulsified **fuel** including used frying oil composed of vegetable oils discarded from restaurants and households. A single cylinder DI diesel engine was

STN Columbus

operated with transesterified fuel from used frying oil, the so called "biodiesel". Compared with gas oil, the BSEC of neat biodiesel improved at high loads and retarded injection timings, while the smoke d. was reduced at all operating conditions. The engine performance with fairly stable emulsions of biodiesel and water was also examd., and emulsified biodiesel with 30% (vol.) water showed a significant redn. in NOx (1100 to 400 ppm) while maintaining the min. BSEC value achieved with gas oil. It was also found that using biodiesel emulsion at a rated output, the trade-off relation NOx vs. BSEC and NOx vs. smoke improved slightly over the gas oil emulsion.

ST biodiesel engine performance

IT Diesel fuel substitutes

(biodiesel; performance of diesel engine using transesterified vegetable oil fuel (effects of water emulsification))

IT Diesel engines

(performance of diesel engine using transesterified vegetable oil fuel (effects of water emulsification))

IT 11104-93-1, Nitrogen oxide, formation (nonpreparative)

RL: FMU (Formation, unclassified); POL (Pollutant); FORM (Formation, nonpreparative); OCCU (Occurrence)

(performance of diesel engine using transesterified vegetable oil fuel (effects of water emulsification))

L7 ANSWER 14 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2001:248940 CAPLUS

DN 135:7694

TI Reduction of NOx and smoke emissions in a diesel engine fueled by biodiesel emulsion combined with EGR

AU Yoshimoto, Yasufumi; Tamaki, Hiroya

CS Niigata Institute of Technology, Japan

SO Society of Automotive Engineers, [Special Publication] SP (2001), SP-1608 (New Developments in Alternative Fuels for CI Engines), 225-233
CODEN: SAESA2; ISSN: 0099-5908

PB Society of Automotive Engineers

DT Journal

LA English

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 59

AB Transesterified fuels (biodiesel fuels; BDF) from vegetable oils are alternative fuels for diesel engines, they are renewable and offer potential redns. in carbon dioxide emissions. Many studies have reported that exhaust from BDF has equal or higher NOx concns. while HC and PM emissions are significantly lower than with gas oil. The aim of the present investigation is to achieve drastic redns. in NOx emissions. Performance tests of a single cylinder DI diesel engine were conducted using water emulsified fuels from BDF and gas oil with varying water addn. rates combined with cooled EGR. The result showed that at a rated output, the emulsified gas oil with water to base fuel vol. ratio of 30% reduced NOx (from 1020 ppm) to 190 ppm with the 21% EGR condition maintaining the min. BSEC value achieved with EGR free gas oil operation. However, the smoke d. increased by 28%. The combined operation of 21% EGR and emulsified BDF with 30% water showed significant redns. in NOx (to 170 ppm) without worsening smoke emissions, although the BSEC increased by 4%.

ST nitrogen oxide exhaust redn diesel biofuel; transesterified vegetable oil biodiesel aq emulsion; air pollution control nitrogen oxide

IT Diesel fuel substitutes

(biodiesel; redn. of nitrogen oxide and smoke emissions in a diesel engine fueled by biodiesel emulsion combined with EGR)

IT Air pollution

STN Columbus

- (control; redn. of nitrogen oxide and smoke emissions in a diesel engine fueled by **biodiesel emulsion** combined with EGR)
- IT Air pollution
(exhaust; redn. of nitrogen oxide and smoke emissions in a diesel engine fueled by **biodiesel emulsion** combined with EGR)
- IT Air pollution
(particulate; redn. of nitrogen oxide and smoke emissions in a diesel engine fueled by **biodiesel emulsion** combined with EGR)
- IT Fatty acids, uses
RL: NUU (Other use, unclassified); USES (Uses)
(vegetable-oil, esters; redn. of nitrogen oxide and smoke emissions in a diesel engine fueled by **biodiesel emulsion** combined with EGR)
- IT 7732-18-5, Water, uses
RL: NUU (Other use, unclassified); USES (Uses)
(redn. of nitrogen oxide and smoke emissions in a diesel engine fueled by **biodiesel emulsion** combined with EGR)
- IT 11104-93-1, Nitrogen oxide (NOx), occurrence
RL: POL (Pollutant); OCCU (Occurrence)
(redn. of nitrogen oxide and smoke emissions in a diesel engine fueled by **biodiesel emulsion** combined with EGR)
- RE.CNT 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD
- RE
- (1) Akasaka, Y; "Exhaust Emissions of a DI Diesel Engine Fueled with Blends of Biodiesel and Low Sulfur Diesel Fuel", SAE Paper 972998 1997
 - (2) Chang, D; "Determination of Particulate and Unburned Hydrocarbon Emissions from Diesel Engines Fueled with Biodiesel", SAE Paper 982527 1998
 - (3) Choi, C; "Effects of Biodiesel Blended Fuels and Multiple Injections on DI Diesel Engines", SAE Paper 970218 1997
 - (4) Crookes, R; "Single and Multi Cylinder Diesel-Engine Tests with Vegetable Oil Emulsions", SAE Paper 922230 1992
 - (5) Crookes, R; J of the Institute of Energy 1995, V68 CAPLUS
 - (6) Desantes, J; "Influence of the EGR Rate, Oxygen Concentration and Equivalent Fuel/Air Ratio on the Combustion Behavior and Pollutant Emissions of a Heavy-Duty Diesel Engine", SAE Paper 2000-01-1813 2000
 - (7) Egnell, R; "The Influence of EGR on heat Release Rate and NO Formation in a DI Diesel Engine", SAE Paper 2000-01-1807 2000
 - (8) Ferrone, C; "The Practical Implementation of Biodiesel as an Alternate Fuel for In-Service Motorcoaches", SAE Paper 973201 1997
 - (9) Geyer, S; Trans of the ASAE 1984
 - (10) Hamasaki, K; Trans of the JSME 1992, V59(548)
 - (11) Hemmerlein, N; "Performance, Exhaust Emissions and Durability of Modern Diesel Engines Running on Rapeseed Oil", SAE Paper 910848 1991
 - (12) Hohl, G; "Rape Oil Methyl Ester (RME) and Used Cooking Oil Methyl Ester (UOME) as Alternative Fuels", SAE Paper 952755 1995
 - (13) Ishii, Y; Trans of the ASAE 1987, V30(3)
 - (14) Ladommatos, N; "Effects of EGR on Heat Release in Diesel Combustion", SAE Paper 980184 1998
 - (15) Last, R; "Emissions and Performance Characteristics of a 4-Stroke, Direct Injected Diesel Engine Fueled with Blends of Biodiesel and Low Sulfur Diesel Fuel", SAE Paper 950054 1995
 - (16) Masjuki, H; "Emissions and Lube Oil Monitoring of a Diesel Engine Fueled with Palm Oil Methyl Esters and Its Emulsions", SAE Paper 961083 1996
 - (17) McDonald, J; "Emissions Characteristics of Soy Methyl Ester Fuels in an IDI Compression Ignition Engine", SAE Paper 950400 1995
 - (18) Mittelbach, M; JAOCs 1988, V65(7) CAPLUS
 - (19) Montagne, X; "Introduction of Rapeseed Methyl Ester in Diesel Fuel - The French National Program", SAE Paper 962065 1996
 - (20) Murayama, T; "Experimental Reduction of NOx, Smoke, and BSFC in a Diesel

STN Columbus

- Engine Using Uniquely Produced Water (0-80%) to Fuel Emulsion", SAE Paper 780224; SAE Trans 87 1979
- (21) Murayama, T; "Low Carbon Flower Buildup, Low Smoke, and Efficient Diesel Operation with Vegetable Oils by Conversion to Mono-Esters and Blending with Diesel Oil or Alcohols", SAE Paper 841161 1984
 - (22) Schramm, J; "Emissions from a Diesel Vehicle Operated on Alternative Fuels in Copenhagen", SAE Paper 1999-01-3603 1999
 - (23) Shiozaki, T; "The Analysis of Combustion Flame Under EGR Conditions in a DI Diesel Engine", SAE Paper 960323 1996
 - (24) Tsukahara, M; "Influence of Emulsified Fuel Properties on the Reduction of BSFC in Diesel Engine"; SAE Paper 891841; SAE Trans 98 1990
 - (25) Tsukahara, M; "Reduction of NOx, Smoke, BSFC, and Maximum Combustion Pressure by Low Compression Ratios in a Diesel Engine Fueled by Emulsified Fuel", SAE Paper 920464 1992
 - (26) Tsukahara, M; "W/O Emulsion Realizes Low Smoke and Efficient Operation of DI Engines without High Pressure Injection", SAE Paper 890449; SAE Trans 98 1990
 - (27) Tsukahara, M; Bulletin of the JSME 1982, V25-202
 - (28) Tsukahara, M; Bulletin of the JSME 1982, V25-208
 - (29) Yoshimoto, Y; "Improvement of BSFC by Reducing Diesel Engine Cooling Losses with Emulsified Fuel", SAE Paper 962022 1996
 - (30) Yoshimoto, Y; "NOx Reduction with EGR in a Diesel Engine Using Emulsified Fuel", SAE Paper 982490 1998
 - (31) Yoshimoto, Y; "Reduction of NOx, Smoke, and BSFC in a Diesel Engine Fueled by Biodiesel Emulsion with Used Frying Oil", SAE Paper 1999-01-3598 1999
 - (32) Zhang, Y; "Combustion Analysis of Esters of Soybean Oil in a Diesel Engine", SAE Paper 962065 1996
 - (33) Ziejewski, M; "Comparative Analysis of the Long-Term Performance of a Diesel Engine on Vegetable Oil Based Alternate Fuels", SAE Paper 860301 1986

L7 ANSWER 15 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2001:248938 CAPLUS

DN 134:313392

TI Effects of alternative **fuels** and intake port geometry on HSDI diesel engine performance and emissions

AU Corgard, Daniel D.; Reitz, Rolf D.

CS University of Wisconsin-Madison, Madison, WI, USA

SO Society of Automotive Engineers, [Special Publication] SP (2001), SP-1608 (New Developments in Alternative Fuels for CI Engines), 189-203
CODEN: SAESA2; ISSN: 0099-5908

PB Society of Automotive Engineers

DT Journal

LA English

CC 51-12 (Fossil Fuels, Derivatives, and Related Products)

Section cross-reference(s): 59

AB This research explored methods to reduce regulated emissions in a small-bore, direct-injection diesel engine. Swirl was used to influence mixing of the spray plumes, and alternative **fuels** were used to study the effects of oxygenated and water **microemulsion** diesel **fuels** on emissions.. Air/fuel mixing enhancement was achieved in the running engine by blocking off a percentage of one of the two intake ports. The swirl was characterized at steady-state conditions with a flowbench and swirl meter. Swirl ratios of 1.85, 2.70, and 3.29 were studied in the engine tests at full load with engine speeds of 1303, 1757, and 1906 rev/min. Increased swirl had neg. effects on emissions due to plume-to-plume interactions. Blends of No. 2 diesel and **biodiesel** were used to investigate the presence of oxygen in the **fuel** and its effects on regulated emissions. Pure No. 2 diesel **fuel**, a 15% and a 30% **biodiesel** blend (by wt.) were used. The effects were investigated at full load with engine speeds of 1303 and 1757 rev/min and a swirl ratio of

STN Columbus

1.85. The particulate emissions were reduced significantly with the use of oxygen in the **fuel**. A study was also performed by using a water-diesel **microemulsion** fuel to assess the potential for addnl. NOx redn. of advanced **fuels** compared to a California Ref. diesel **fuel**. The **microemulsion** contained 10% by vol., 20-30 nm diam. water droplets, and was run at part and full loads at 1757 rev/min. The results overall showed great redns. in regulated emissions, indicating that this new **fuel** concept holds significant promise for future applications.

ST diesel engine performance emission alternative **fuels**

IT **Fuels**
 (alternative; effects of alternative **fuels** and intake port geometry on HSDI diesel engine performance and emissions)

IT Diesel **fuel** substitutes
 (**biodiesel**; effects of alternative **fuels** and intake port geometry on HSDI diesel engine performance and emissions)

IT Air pollution
 (control; effects of alternative **fuels** and intake port geometry on HSDI diesel engine performance and emissions)

IT Combustion
 Diesel engines
 (effects of alternative **fuels** and intake port geometry on HSDI diesel engine performance and emissions)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; Personal Communication from Thiel, M 1998
- (2) Anon; Private Communication from Gonzalez D, M A 1999
- (3) Batchelor, G; An Introduction to Fluid Dynamics 1970
- (4) Choi, C; PhD Thesis at University of Wisconsin-Madison 1998
- (5) Coghe, A; "Effects of Intake Ports on the In-Cylinder Air Motion under Steady Flow Conditions", SAE Paper 880384 1988
- (6) Corgard, D; M S Thesis at University of Wisconsin-Madison 2000
- (7) Kang, K; Journal of Engineering for Gas Turbines and Power, Transactions of the ASME 2000
- (8) Krieger, R; "Diesel Engines:One Option to Power Future Personal Transportation Vehicles", SAE Paper 972683 1997
- (9) Monaghan, M; "Air Motion and Its Effect on Diesel Performance and Emissions", SAE Paper 810255 1981
- (10) Montgomery, D; SAE Paper 960316, SAE Transactions, Section 3, Journal of Engines 1996, V105, P356
- (11) Rubino, L; "The Effect of Oxygenated Additives on Soot Precursor Formation in a Counterflow Diffusion Flame", SAE Paper 1999-01-3589 1999
- (12) Stone, C; "The Measurement and Analysis of Swirl in Steady Flow", SAE Paper 921642 1992
- (13) Tennison, P; ASME Transactions Journal of Gas Turbines and Power 2000

L7 ANSWER 16 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 2000:307715 CAPLUS

DN 132:336812

TI Vegetable oil, multicomponent **fuels** and water **emulsions** in the production of **biodiesel**

AU Maurer, K.

CS Landesanstalt fur landwirtschaftliches Maschinen- und Bauwesen, Universitat Hohenheim, Germany

SO Landbauforschung Voelkenrode, Sonderheft (1998), 190(Biodiesel--Optimierungspotentiale und Umwelteffekte), 45-50
 CODEN: LVSWAI; ISSN: 0376-0723

PB Bundesforschungsanstalt fuer Landwirtschaft Braunschweig-Voelkenrode

DT Journal

LA German

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)

AB Fatty acid Me ester, rape seed oil and several mixts. of rape seed oil

STN Columbus

with alcs., gasoline and diesel fuel were tested on their reliability for substitution of diesel fuel in engines. The specific d., the viscosity, the inflammation point, the Cetan value, and the calorific value of these components were compared to that of pure diesel fuel. It was found that fatty acid Me ester, so-called **biodiesel**, was a good substitute for diesel fuel, while the most mixts. of rape seed oil with alcs. and mineral oil components did not fulfill the recommendations to substitute diesel fuel in conventional engines.

ST rape seed oil mixt substitute diesel fuel; **biodiesel** fatty acid vegetable oil

IT Fatty acids, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(Me esters; vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

IT Diesel fuel substitutes

(**biodiesel**; vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

IT **Emulsions**

Emulsions

(diesel fuel; vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

IT Diesel fuel

Diesel fuel

(**emulsions**; vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

IT Viscosity

(vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

IT Gasoline

Rape oil

RL: TEM (Technical or engineered material use); USES (Uses)
(vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

IT Fatty acids, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(vegetable-oil, Me esters; vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

IT Fats and Glyceridic oils, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(vegetable; vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

IT 64-17-5, Ethanol, uses 192391-56-3, RME

RL: TEM (Technical or engineered material use); USES (Uses)
(vegetable oil, multicomponent **fuels**, and water **emulsions** in prodn. of **biodiesel**)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Elab Engineering Development Ab Und Ecotraffic RDAb; Project Esterol 1998, 1
- (2) Grieser, F; Motoruntersuchungen mit Tessol II 1997
- (3) Konig, W; Untersuchungen zum Einsatz von Rapsol und Rapsolprodukten im landwirtschaftlichen Betrieb, Abschlubericht zum gleichnamigen Forschungsvorhaben des BML 1996
- (4) Mauer, K; Anforderungen an pflanzliche Ole als Treibstoff, Vortrag Landwirtschaftlicher Hochschultag Universitat Hohenheim 1995
- (5) Mauerer, K; Vortrag anlalich Symposium Euro-Bio-Diesel 1994
- (6) May, H; Bericht uber Prufstandsuntersuchungen mit TESSOL-NADI 1994
- (7) May, H; Neuere Untersuchungen uber die Umweltvertraglichkeit und die Dauerstandfestigkeit von Vorkammer- und direkteinspritzenden Dieselmotoren bei Betrieb mit Rapsol und Rapsolmethylester 1992, V1020, PS189
- (8) Reiser, W; Ermittlung von motor- und verbrennungstechnischen Kenndaten an einem Dieselmotor mit Direkteinspritzung bei Betrieb mit unterschiedlich

STN Columbus

- aufbereitetem Rapsol, VDI-Fortschritt-Berichte 1997, 316
- (9) Rinaldi, M; Pflanzenolgemische als Dieseltreibstoff, FAT-Berichte 1997, 502
- (10) Weidmann, K; Anwendung von Rapsol in Fahrzeug-Dieselmotoren, ATZ Automobiltechnische Zeitschrift 1995, V97
- (11) Worgetter, M; Erprobung von Biodiesel-Flottenversuch, Kraftstoffqualität und Emissionen Technische Akademie Esslingen 1991
- (12) Zilmans, R; Biodiesel senkt die Emissionen 1996

L7 ANSWER 17 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 1999:743170 CAPLUS

DN 132:52280

TI Reduction of NOx, smoke, and BSFC in a diesel engine fueled by **biodiesel emulsion** with used frying oil

AU Yoshimoto, Yasufumi; Onodera, Masayuki; Tamaki, Hiroya

CS Niigata Institute of Technology, Japan

SO Society of Automotive Engineers, [Special Publication] SP (1999), SP-1482(Alternative Fuels 1999), 167-174
CODEN: SAESA2; ISSN: 0099-5908

PB Society of Automotive Engineers

DT Journal

LA English

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 59, 60

AB This paper investigates engine performance with a stable emulsified fuel including frying oil, composed of vegetable oils discarded from restaurants and households. To reduce the oil viscosity, equal proportions of used frying oil and gas oil were mixed and **emulsions** of this blended fuel and water were prep'd. Performance tests of a single cylinder DI diesel engine showed that the NOx concn. and smoke d. both reduced without worsening BSFC with water to fuel vol. ratios of 15-30% at a rated output. The engine was also operated with transesterified fuel from used frying oil, the so called "**biodiesel**". The BSFC of neat **biodiesel** was lower than with gas oil at high loads and retarded injection timings, while the smoke d. was reduced at all operating conditions. The engine performance with fairly stable **emulsions** of **biodiesel** and water was also exam'd., and emulsified **biodiesel** with 30 %(vol.) water showed a significant redn. in NOx (1100 to 400 ppm) while maintaining the min. BSFC value achieved with gas oil.

ST air pollution control exhaust **biodiesel fuel**; frying oil used **emulsion diesel fuel**

IT Diesel fuel substitutes

(**biodiesel**; redn. of NOx, smoke, and BSFC in a diesel engine fueled by **biodiesel emulsion** with used frying oil)

IT Air pollution

(control; redn. of NOx, smoke, and BSFC in a diesel engine fueled by **biodiesel emulsion** with used frying oil)

IT Air pollution

(exhaust; redn. of NOx, smoke, and BSFC in a diesel engine fueled by **biodiesel emulsion** with used frying oil)

IT Exhaust particles (engine)

(redn. of NOx, smoke, and BSFC in a diesel engine fueled by **biodiesel emulsion** with used frying oil)

IT Fats and Glyceridic oils, uses

RL: NUU (Other use, unclassified); USES (Uses)

(vegetable, frying, used; redn. of NOx, smoke, and BSFC in a diesel engine fueled by **biodiesel emulsion** with used frying oil)

IT 11104-93-1, Nitrogen oxide (NOx), occurrence

RL: POL (Pollutant); OCCU (Occurrence)

(redn. of NOx, smoke, and BSFC in a diesel engine fueled by **biodiesel emulsion** with used frying oil)

STN Columbus

RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Akasaka, Y; SAE Paper 972998 1997
- (2) Chang, D; JAOCS 1996, V73(11) CAPLUS
- (3) Chang, D; SAE Paper 971684 1997
- (4) Chang, D; SAE Paper 982527 1998
- (5) Choi, C; SAE Paper 970218 1997
- (6) Crookes, R; J of the Institute of Energy 1995, V68 CAPLUS
- (7) Crookes, R; SAE Paper 922230 1992
- (8) Ferrone, C; SAE Paper 973201 1997
- (9) Geyer, S; Trans of the ASAE 1984
- (10) Hamasaki, K; Trans of the JSME (in Japanese) 1992, V59(548)
- (11) Hemmerlein, N; SAE Paper 910848 1991
- (12) Hohl, G; SAE Paper 952755 1995
- (13) Ishii, Y; Trans of the ASAE 1987, V30(3)
- (14) Last, R; SAE Paper 950054 1995
- (15) Masjuki, H; SAE Paper 961083 1996
- (16) McDonald, J; SAE Paper 950400 1995
- (17) Mittelbach, M; JAOCS 1988, V65(7) CAPLUS
- (18) Montagne, X; SAE Paper 962065 1996
- (19) Murayama, T; SAE Paper 841161 1984
- (20) Murayama, T; SAE Trans 1979, V87
- (21) Niemi, S; SAE Paper 982528 1998
- (22) Tsukahara, M; Bulletin of the JSME 1982, V25-202
- (23) Tsukahara, M; Bulletin of the JSME 1982, V25-208
- (24) Tsukahara, M; SAE Paper 920464 1992
- (25) Tsukahara, M; SAE Trans 1990, V98
- (26) Tsukahara, M; SAE Trans 1990, V98
- (27) Yoshimoto, Y; SAE Paper 962022 1996
- (28) Yoshimoto, Y; SAE Paper 982490 1998
- (29) Zhang, Y; SAE Paper 962065 1996
- (30) Ziejewski, M; SAE Paper 860301 1986

L7 ANSWER 18 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 1999:505962 CAPLUS

DN 131:132259

TI Motor fuel for diesel engines suitable for operation with difficultly
combustible fuels

IN Wolf, Gabriele

PA Germany

SO Ger. Offen., 2 pp.

CODEN: GWXXBX

DT Patent

LA German

IC ICM C10L001-10

ICS C10L001-32; F02M025-00

CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	DE 19904194	A1	19990805	DE 1999-19904194	19990202
PRAI	DE 1998-29801741		19980203		

AB The diesel fuel substitute contains water, vegetable oil or waste fat,
and an emulsifier or solvent to form a homogeneous liq. Optionally, the
fuel also contains a conventional corrosion inhibitor, freeze-protecting
agent, and cetane no. improver.

ST biodiesel water emulsion fuel; diesel fuel substitute water
emulsion; vegetable oil emulsion diesel fuel substitute; waste fat
emulsion diesel fuel substitute

IT Diesel fuel substitutes
(biodiesel; aq. emulsion of plant oil or waste fat)

STN Columbus

IT Emulsifying agents
Solvents
(in aq. **emulsion biodiesel**)
IT Fats and Glyceridic oils, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(vegetable; in aq. **emulsion biodiesel**)
IT Fats and Glyceridic oils, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(waste; in aq. **emulsion biodiesel**)

L7 ANSWER 19 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 1999:335271 CAPLUS
DN 130:340525
TI **Biodiesel** production: a review
AU Ma, Fangrui; Hanna, Milford A.
CS Department of Food Science and Technology, University of Nebraska,
Lincoln, NE, 68583-0730, USA
SO Bioresource Technology (1999), 70(1), 1-15
CODEN: BIRTEB; ISSN: 0960-8524
PB Elsevier Science Ltd.
DT Journal; General Review
LA English
CC 52-0 (Electrochemical, Radiational, and Thermal Energy Technology)
AB A review with many refs. **Biodiesel** has become more attractive recently because of its environmental benefits and the fact that it is made from renewable resources. The cost of **biodiesel**, however, is the main hurdle to commercialization of the product. The used cooking oils are used as raw material, adaptation of continuous transesterification process and recovery of high quality glycerol from **biodiesel** byproduct (glycerol) are primary options to be considered to lower the cost of **biodiesel**. There are four primary ways to make **biodiesel**: direct use and blending, **microemulsions**, thermal cracking (pyrolysis), and transesterification. The most commonly used method is transesterification of vegetable oils and animal fats. The transesterification reaction is affected by molar ratio of glycerides to alc., catalysts, reaction temp., reaction time, and free fatty acids and water content of oils or fats. The mechanism and kinetics of the transesterification show how the reaction occurs and progresses. The processes of transesterification and its downstream operations are also addressed.
ST review **biodiesel** prodn
IT Diesel **fuel** substitutes
Diesel **fuel** substitutes
(**biodiesel**; evaluation of methods for prodn. of **biodiesel**)

RE.CNT 71 THERE ARE 71 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) ASAE; Proceedings of the international conference on plant and vegetable oils as fuels 1982
- (2) Adams, C; JAOCS 1983, V60, P1574 CAPLUS
- (3) Alencar, J; J Agric Food Chem 1983, V31, P1268 CAPLUS
- (4) Ali, Y; PhD dissertation. Biological Systems Engineering, University of Nebraska-Lincoln 1995
- (5) Allen, H; US 2383579 1945 CAPLUS
- (6) Anon; JAOCS 1982, V59, P780A
- (7) Bartholomew, D; JAOCS 1981, V58, P286A
- (8) Billaud, F; JAOCS 1995, V72, P1149 CAPLUS
- (9) Bradshaw, G; US 2360844 1944 CAPLUS
- (10) Calvin, M; Ann Proc Phytochem Soc Eur 1985, V26, P147
- (11) Chang, C; Ind Eng Chem 1947, V39, P1543 CAPLUS
- (12) Eckey, E; JAOCS 1956, V33, P575
- (13) Engler, C; JAOCS 1983, V60, P1592 CAPLUS

STN Columbus

- (14) Feuge, R; JAOCS 1949, V26, P97 CAPLUS
- (15) Formo, M; Physical properties of fats and fatty acids Vol 1 4th edition 1979, P193
- (16) Freedman, B; JAOCS 1984, V61, P1638 CAPLUS
- (17) Freedman, B; JAOCS 1986, V63, P1375 CAPLUS
- (18) Gauglitz, E; JAOCS 1963, V40, P197 CAPLUS
- (19) Goering, C; Final report for project on Effect of nonpetroleum fuels on durability of direct-injection diesel engines under contract 59-2171-1-6-057-0 1984
- (20) Goering, C; JAOCS 1984, V61, P1627 CAPLUS
- (21) Goering, C; Trans ASAE 1982, V25, P1472 CAPLUS
- (22) Goering, C; proceedings of the international conference on plant and vegetable oils as fuels 1982, V4, P279
- (23) Grossley, T; JAOCS 1962, V39, P9
- (24) Harrington, K; JAOCS 1985, V62, P1009 CAPLUS
- (25) Hartman, L; JAOCS 1956, V33, P129 CAPLUS
- (26) Harwood, H; JAOCS 1984, V61, P315 CAPLUS
- (27) Jackson, M; JAOCS 1996, V73, P353 CAPLUS
- (28) Keim, G; US 2383601 1945 CAPLUS
- (29) Kildiran, G; JAOCS 1996, V73, P225 CAPLUS
- (30) Kincs, F; JAOCS 1985, V62, P815 CAPLUS
- (31) Krawczyk, T; INFORM 1996, V7, P801
- (32) Kreutzer, U; JAOCS 1984, V61, P343 CAPLUS
- (33) Lee, I; JAOCS 1995, V72, P1155 CAPLUS
- (34) Ma, F; Bioresource Technology 1999, V69, P289 CAPLUS
- (35) Ma, F; Ind Eng Chem Res 1998, V37, P3768 CAPLUS
- (36) Ma, F; PhD dissertation Biological Systems Engineering, University of Nebraska-Lincoln 1998
- (37) Ma, F; Trans ASAE 1998, V41, P1261 CAPLUS
- (38) Muniyappa, P; Master thesis, Chemical Engineering, University of Nebraska-Lincoln 1995
- (39) Murayama, T; INFORM 1994, V5, P1138
- (40) Nagel, N; Appl Biochem Biotechnol 1990, V24, P355
- (41) Niehaus, R; Trans ASAE 1986, V29, P683
- (42) Nye, M; Proc Vegetable Oil as Diesel Fuel Seminar III 1983, P78
- (43) Ooi, C; JAOCS 1996, V73, P233 CAPLUS
- (44) Peterson, C; JAOCS 1983, V60, P1579 CAPLUS
- (45) Pioch, D; Oleagineux 1993, V48, P289 CAPLUS
- (46) Pryde, E; JAOCS 1983, V60, P1557
- (47) Pryde, E; JAOCS 1984, V61, P1609
- (48) Pryor, R; Trans ASAE 1983, V26(2), P333 CAPLUS
- (49) Schlautman, N; Trans ASAE 1986, V29(1), P70
- (50) Schlick, M; Trans ASAE 1988, V31(5), P1345
- (51) Schwab, A; Fuel 1987, V66, P1372 CAPLUS
- (52) Schwab, A; JAOCS 1988, V65, P1781 CAPLUS
- (53) Shay, E; Biomass and Bioenergy 1993, V4, P227 CAPLUS
- (54) Smith, M; US 2444-486 Process of producing esters 1949
- (55) Sonntag, N; Composition and characteristics of individual fats and oils vol 1 4th edition 1979, P343
- (56) Sonntag, N; Reactions of fats and fatty acids vol 1 4th edition 1979, P99
- (57) Sonntag, N; Structure and composition of fats and oils vol 1 4th edition 1979, P1
- (58) Sprules, F; US 2366-494 1950 CAPLUS
- (59) Sridharan, R; J Scient Ind Res 1974, V33, P178 CAPLUS
- (60) Stern, R; US 5424-466 1995 CAPLUS
- (61) Strayer, R; JAOCS 1983, V60, P1587 CAPLUS
- (62) Tanaka, Y; US 4303-590 1981 CAPLUS
- (63) Trent, W; US 2383-632 1945 CAPLUS
- (64) Weisz, P; Science 1979, V206, P57 CAPLUS
- (65) Wimmer, T; AT 349-571 1992
- (66) Wimmer, T; WO 9200-9268 PCT Int Appl 1992
- (67) Wright, H; A report on ester interchange 1944, V21, P145 CAPLUS

STN Columbus

- (68) Zhang, D; Master thesis, Food Science and Technology, University of Nebraska-Lincoln 1994
- (69) Ziejewski, M; Argic Rev Man 1983, P106
- (70) Ziejewski, M; International Congress and Exposition 1986
- (71) Ziejewski, M; JAOCs 1984, V61, P1620 CAPLUS

L7 ANSWER 20 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 1999:313616 CAPLUS
 DN 131:33773
 TI The effect of mixing on transesterification of beef tallow
 AU Ma, Fangrui; Clements, L. Davis; Hanna, Milford A.
 CS Industrial Agricultural Product Center, University of Nebraska-Lincoln, Lincoln, NE, 68583-0730, USA
 SO Bioresource Technology (1999), 69(3), 289-293
 CODEN: BIRTEB; ISSN: 0960-8524
 PB Elsevier Science Ltd.
 DT Journal
 LA English
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 45, 51
 AB Mixing is very important to the transesterification of beef tallow, because melted beef tallow and a NaOH-MeOH mixt. are immiscible. There was no reaction without mixing. When NaOH-MeOH was added to the melted beef tallow in the reactor while stirring, stirring speed was insignificant. Reaction time was the controlling factor in detg. the yield of Me esters. This suggested that the stirring speeds investigated exceeded the threshold requirement of mixing. When NaOH-MeOH was added to the melted beef tallow without stirring, higher stirring speeds or longer stirring times were needed to mix the two phases subsequently. In both cases, once the two phases were mixed and the reaction was started, stirring was no longer needed. Miesek's equation was applicable to the former case. The droplet diam. was inversely proportional to the square of the rotation speed (n). But in the latter case, the droplet diam. was inversely proportional to n^{1.2}. Smaller NaOH-MeOH droplets in melted beef tallow resulted in fast transesterification reaction and stable emulsion.
 ST **biodiesel** transesterification beef tallow mixing effect
 IT Diesel fuel substitutes
 (biodiesel; effect of mixing on transesterification of beef tallow)
 IT Mixing
 Transesterification
 Transesterification catalysts
 (effect of mixing on transesterification of beef tallow)
 IT Tallow
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (effect of mixing on transesterification of beef tallow)
 IT Fatty acids, preparation
 RL: SPN (Synthetic preparation); PREP (Preparation)
 (tallow, Me esters; effect of mixing on transesterification of beef tallow)
 IT 1310-73-2, Sodium hydroxide, uses
 RL: CAT (Catalyst use); USES (Uses)
 (effect of mixing on transesterification of beef tallow)
 IT 67-56-1, Methanol, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (effect of mixing on transesterification of beef tallow)
 RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE
 (1) Ali, Y; Biores Technol 1994, V47, P131 CAPLUS
 (2) Ali, Y; Biores Technol 1995, V52, P237 CAPLUS
 (3) Ali, Y; Biores Technol 1995, V53, P243 CAPLUS

STN Columbus

- (4) Ali, Y; JAOCS 1995, V72, P1557 CAPLUS
- (5) Azbel, D; Fluid Mechanics and Unit Operations 1983, P680
- (6) Azbel, D; Fluid Mechanics and Unit Operations 1983, P705
- (7) Bradshaw, G; US 2360844 1944 CAPLUS
- (8) Freedman, B; JAOCS 1984, V61, P1638 CAPLUS
- (9) Freedman, B; JAOCS 1986, V63, P1375 CAPLUS
- (10) Hanna, M; JAOCS 1996, V73, P759 CAPLUS
- (11) Kildiran, G; JAOCS 1996, V73, P225 CAPLUS
- (12) Krawczyk, T; INFORM 1996, V7, P801
- (13) Ma, F; Ind Eng Chem Res 1998, V37, P3768 CAPLUS
- (14) Peterson, C; Proceedings of an Alternative Energy Conference of ASAE 1992, P99 CAPLUS
- (15) Plank, C; J Chromatogr A 1995, V697, P461 CAPLUS
- (16) Schwab, A; Fuel 1987, V66, P1372 CAPLUS

L7 ANSWER 21 OF 21 CAPLUS COPYRIGHT 2003 ACS

Full Text

AN 1998:501563 CAPLUS
 DN 129:163825
 TI **Biodiesel Fuel** from Animal Fat. Ancillary Studies on
 Transesterification of Beef Tallow
 AU Ma, Fangrui; Clements, L. Davis; Hanna, Milford A.
 CS Food Science and Technology Biological Systems Engineering and Industrial
 Agricultural Products Center, University of Nebraska Lincoln, Lincoln, NE,
 68583, USA
 SO Industrial Engineering Chemistry Research (1998), 37(9), 3768-3771
 CODEN: IECRED; ISSN: 0888-5885
 PB American Chemical Society
 DT Journal
 LA English
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 45
 AB Transesterification of beef tallow was investigated. The soly. of ethanol
 in beef tallow was much higher than that of methanol. At 100° the
 soly. of methanol was 19% (wt./wt.). The soly. of ethanol in beef tallow
 reached 100% (wt./wt.) at about 68°. For the distribution of
 methanol between beef tallow Me esters (BTME) and glycerol, the percentage
 of total methanol in the glycerol phase was higher than that in the fatty
 acid Me ester (FAME) phase in a simulated system at room temp. At
 65-80°, however, the percentage of total methanol in FAME (60%
 (wt./wt.)) was higher than that in glycerol (40% (wt./wt.)) in a 90:10
 (wt./wt.) blend of FAME and glycerol. This coincided with the methanol
 distribution in the transesterified product. The process for making beef
 tallow Me esters should recover methanol using vacuum distn., sep. the
 ester and glycerol phases, and then wash the beef tallow Me esters with
 warm water. At neutral pH, the sepn. of ester and glycerol and water
 washing was easier because it reduced **emulsion** formation.
 ST **biodiesel fuel** animal fat; transesterification beef tallow **biodiesel fuel**
 IT Fatty acids, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (Me esters; ancillary studies on transesterification of beef tallow for
biodiesel fuel)
 IT Diesel fuel substitutes
 Transesterification
 (ancillary studies on transesterification of beef tallow for
biodiesel fuel)
 IT Tallow
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (ancillary studies on transesterification of beef tallow for
biodiesel fuel)
 IT **Fuels**
 (biofuels; ancillary studies on transesterification of beef tallow for

STN Columbus

biodiesel fuel)
 IT Fatty acids, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (tallow, Me esters; ancillary studies on transesterification of beef
 tallow for **biodiesel fuel**)
 IT 64-17-5, Ethanol, processes
 RL: PEP (Physical, engineering or chemical process); PROC (Process)
 (ancillary studies on transesterification of beef tallow for
biodiesel fuel)
 IT 67-56-1, Methanol, reactions
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (ancillary studies on transesterification of beef tallow for
biodiesel fuel)
 IT 56-81-5, 1,2,3-Propanetriol, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (ancillary studies on transesterification of beef tallow for
biodiesel fuel)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD
 RE

- (1) Bradshaw, G; US 2360844 1944 CAPLUS
- (2) Feuge, R; J Am Oil Chem Soc 1949, V26, P97 CAPLUS
- (3) Freedman, B; J Am Oil Chem Soc 1984, V61, P1638 CAPLUS
- (4) Freedman, B; J Am Oil Chem Soc 1986, V63, P1375 CAPLUS
- (5) Hasset, D; Bull No 83-05-EES-03 1983
- (6) Jungermann, E; Soap Bailey's Industrial Oil and Fat Products, 4th ed 1979,
 V1, P510
- (7) Kildiran, G; J Am Oil Chem Soc 1996, V73, P225 CAPLUS
- (8) Krawczyk, T; INFORM 1996, V7, P801
- (9) Kreutzer, U; J Am Oil Chem Soc 1984, V61, P343 CAPLUS
- (10) Schwab, A; Fuel 1987, V66, P1372 CAPLUS
- (11) Shay, E; Biomass Bioenergy 1993, V4, P227 CAPLUS
- (12) Varese, R; INFORM 1996, V7, P816

=> file stnguide

COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	87.58	87.79
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL
	ENTRY	SESSION
CA SUBSCRIBER PRICE	-13.67	-13.67

FILE 'STNGUIDE' ENTERED AT 07:11:11 ON 18 JUL 2003
 USE IS SUBJECT TO THE TERMS OF YOUR CUSTOMER AGREEMENT
 COPYRIGHT (C) 2003 AMERICAN CHEMICAL SOCIETY, JAPAN SCIENCE
 AND TECHNOLOGY CORPORATION, AND FACHINFORMATIONSZENTRUM KARLSRUHE

FILE CONTAINS CURRENT INFORMATION.
 LAST RELOADED: Jul 11, 2003 (20030711/UP).

=> file caplus

COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	0.42	88.21
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL
	ENTRY	SESSION
CA SUBSCRIBER PRICE	0.00	-13.67

FILE 'CAPLUS' ENTERED AT 07:26:23 ON 18 JUL 2003
 USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

STN Columbus

PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2003 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is held by the publishers listed in the PUBLISHER (PB) field (available for records published or updated in Chemical Abstracts after December 26, 1996), unless otherwise indicated in the original publications. The CA Lexicon is the copyrighted intellectual property of the American Chemical Society and is provided to assist you in searching databases on STN. Any dissemination, distribution, copying, or storing of this information, without the prior written consent of CAS, is strictly prohibited.

FILE COVERS 1907 - 18 Jul 2003 VOL 139 ISS 4
FILE LAST UPDATED: 17 Jul 2003 (20030717/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d his

(FILE 'HOME' ENTERED AT 07:06:51 ON 18 JUL 2003)

FILE 'CAPLUS' ENTERED AT 07:07:08 ON 18 JUL 2003

L1 218311 S EMULSION OR MICROEMULSION OR MICRO-EMULSION
L3 1862 S (SOYA OR SOYBEAN OR SOY) AND RAPESEED
L4 665 S BIODIESEL
L5 104 S L1 AND (L4 OR L3)
L6 36960 S EMULSIFIER OR EMULSIVE
L7 21 S FUEL AND L5

FILE 'STNGUIDE' ENTERED AT 07:11:11 ON 18 JUL 2003

FILE 'CAPLUS' ENTERED AT 07:26:23 ON 18 JUL 2003

=> s stearyl and cetyl
12347 STEARYL
1 STEARYLS
12347 STEARYL
(STEARYL OR STEARYLS)
12096 CETYL
L8 2405 STEARYL AND CETYL

=> s l1 ans l8
MISSING OPERATOR L1 ANS
The search profile that was entered contains terms or nested terms that are not separated by a logical operator.

=> s l1 and l8
L9 504 L1 AND L8

=> s l9 and (l3 or l4)
L10 0 L9 AND (L3 OR L4)

=> log y		
COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	5.11	93.32
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL

STN Columbus

	ENTRY	SESSION
CA SUBSCRIBER PRICE	0.00	-13.67

STN INTERNATIONAL LOGOFF AT 07:28:31 ON 18 JUL 2003